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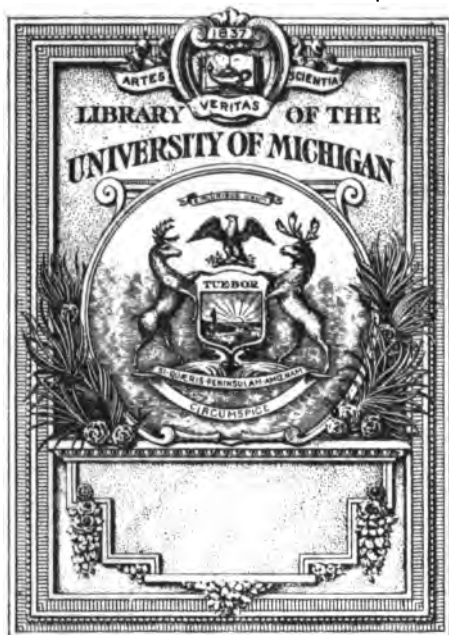
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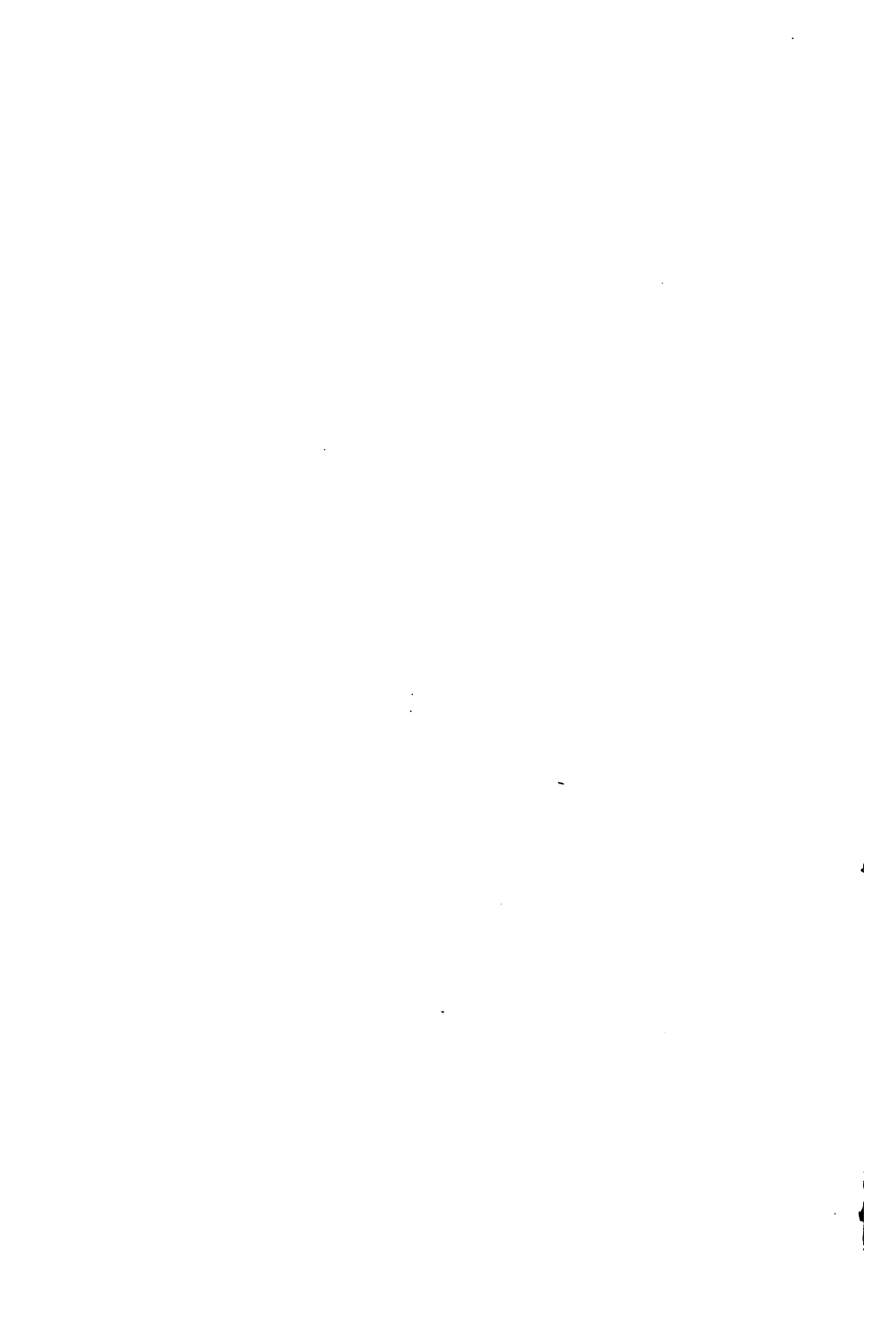


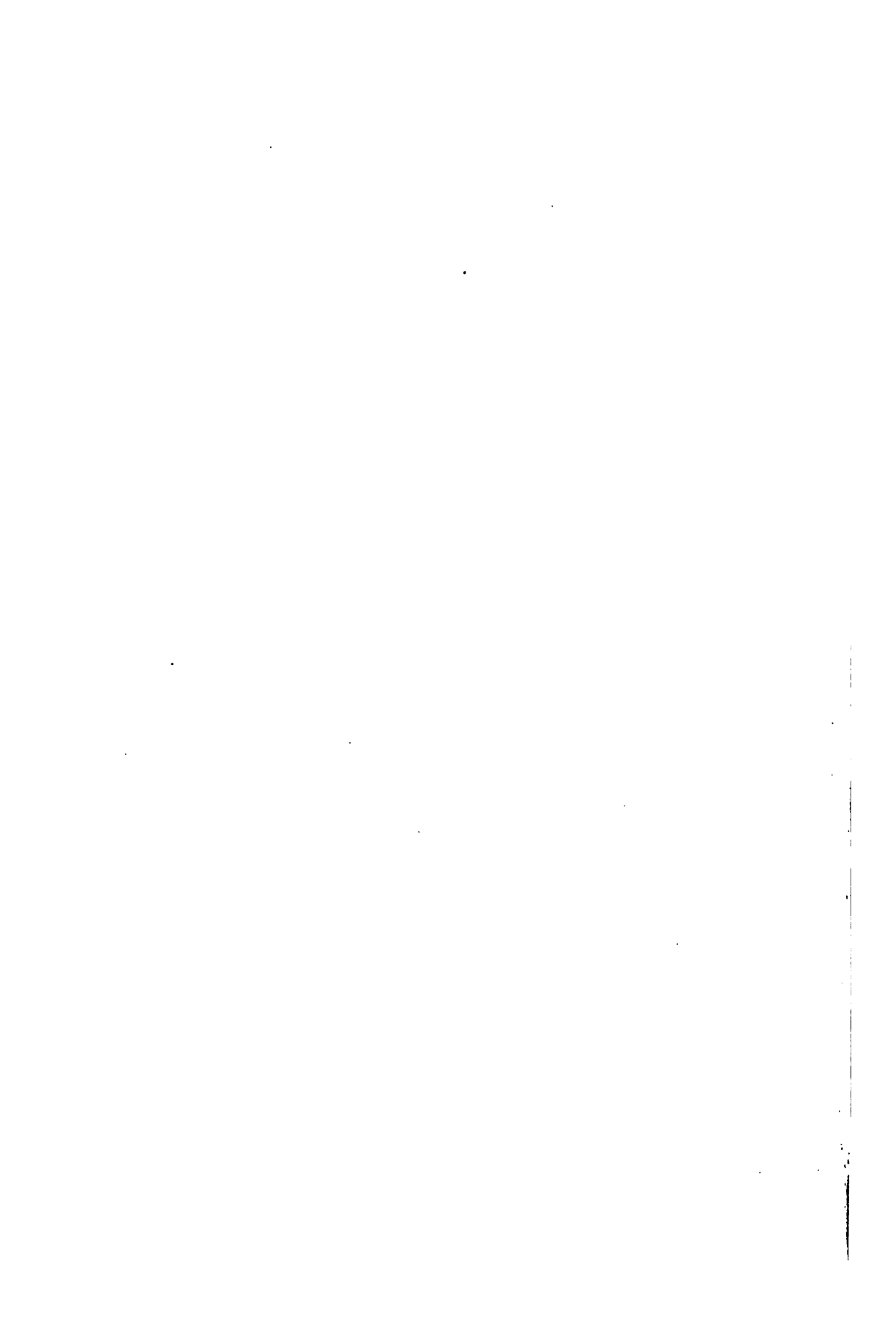
THE GIFT OF
Prof. Henry Kraemer

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HANDBOOK
OF THE
FLORA OF PHILADELPHIA AND VICINITY

CONTAINING

DATA RELATING TO THE PLANTS WITHIN THE FOLLOWING RADIUS:

EASTERN PENNSYLVANIA, NORTH TO THE BLUE MOUNTAINS,
AND WEST TO THE SUSQUEHANNA; ALL OF NEW
JERSEY EXCEPT THE NORTHERN COUNTIES;
AND NEW CASTLE COUNTY, DELAWARE

WITH KEYS FOR IDENTIFICATION OF SPECIES

COMPILED BY

IDA A. KELLER

AND

STEWARTSON BROWN

PHILADELPHIA, PA.:
PHILADELPHIA BOTANICAL CLUB
1906

WICKERSHAM PRESS
LANCASTER, PA.

THE growing demand among those who desire to study the flora of Philadelphia and vicinity, for a book of reference containing a list of plants to be found within the districts accessible to the local collector, and such further information in regard to these, as a book of this kind should contain, suggested the advisability of collecting and arranging in a systematic form such data as were available for this purpose.

The many valuable communications to the Philadelphia Botanical Club and the observations of its members and others, who have so industriously worked in this field, seemed to form an excellent basis for a work of this kind. The summarizing and arranging the results of the work done so far is here presented in the form of a permanent record—a handbook for the Philadelphia botanist.

The area reported upon is designated on the title-page, and is, in the main, the range prescribed for the work of the Philadelphia Botanical Club. The counties included are the following:

PENNSYLVANIA.

Philadelphia,
Bucks,
Montgomery,
Chester,
Lancaster,
Berks,
Lehigh,
Northampton,
Dauphin.

NEW JERSEY.

Burlington,
Camden,
Gloucester,
Salem,
Cumberland,
Cape May,
Atlantic,
Ocean,
Monmouth,
Mercer,
Middlesex,
Somerset,
Hunterdon.

DELAWARE.

New Castle.

The arrangement adopted in Britton's Manual has been followed. In connection with each species one at least, or perhaps more, common names are given, if such exist. In many cases a common name follows only the genus because the individual species are not sufficiently well distinguished by the laymen either on account of the fact that they are rare or com-

paratively new to science, or it may be, that the plants are too inconspicuous and the characters are not sufficiently well marked to attract the attention of the ordinary observer.

Upon the common name follows a reference to the page in Britton's Manual upon which the species is described in detail.

Next follow the data given by the different contributors and in each case the authority is mentioned. The key to the abbreviations of names is found appended.

A general statement in regard to habitat and time of flowering is also made.

When no data are added, the plant is considered to be of general distribution.

All data from New Castle County have been furnished by Mr. Edward Tatnall, except where otherwise mentioned.

The information in regard to Bucks County has been revised by Dr. C. D. Fretz, who has just completed a revised catalogue of that region.

The data from Delaware County were revised by Mr. Benjamin H. Smith, who, for many years, has made a careful study of that county.

Thanks are due to Miss Lillian Roseman, who assisted materially in the arrangement of the information supplied.

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Porter's Flora of Pennsylvania.		P.



GENERAL KEY.

SUBKINGDOM PTERIDOPHYTA.

Plants producing no flowers and seeds but spores which develop into flat or irregular prothallia bearing the reproductive organs.

<i>Spores of one kind only.</i>	PAGE
Sporanges borne on back or margin of fronds, or in special spikes or panicles.....	FILICALES 7
Sporanges borne beneath shield-shaped scales in a terminal spike; stems jointed, sheathed at nodes.....	EQUISETALES 14
Sporanges solitary in the axils of the leaves.	LYCOPODIACEAE IN LYCOPODIALES 15
<i>Spores of two kinds, large and small.</i>	
Sporanges enclosed in sporocarps.....	SALVINIALES 14
Sporanges in the axils of the leaves.	SELAGINELLACEAE AND ISOETACEAE IN LYCOPODIALES 17

SUBKINGDOM SPERMATOPHYTA.

Plants producing flowers, whose essential organs are stamens and pistils, the latter producing true seeds.

1. Ovules not enclosed in an ovary. **Class 1. GYMNOSPERMAE** 18
2. Ovules enclosed in an ovary. **Class 2. ANGIOSPERMAE** 20

Embryo with 1 Cotyledon; fibro-vascular bundles scattered through pith; leaves mostly parallel-veined. flower parts usually in threes.

Subclass 1. MONOCOTYLEDONES 20

- A. Flowers aggregated on a spadix; or plants minute, floating free, the flowers few or solitary on the margin or back of thallus. **ARALES** 88
- B. Flowers not collected on a spadix.

Flowers destitute of corolla-like perianth.

Flowers in the axils of dry, chaffy scales; arranged in spikes or spikelets.....**GRAMINALES** 26

Flowers not in the axils of dry, chaffy scales; aquatic or marsh plants.

Perianth represented by bristles or chaff-like scales; flowers monœcious, spicate or capitate; endosperm mealy or fleshy.....**PANDANALES** 20

Perianth none; endosperm none or very little.
NAIADALES 21

Flowers with corolla-like perianth.

Flowers regular (except Commelina); the parts of the usually complete flowers mostly in 3's or 6's (except most Naiadales).

NOTE.—Page refers to orders, except when in italics, leading then to genus.

* After name of order indicates that this order properly belongs to the other series, *e. g.*, Primulales are Gamopetalae but Glaux is an exception.

Endosperm none or very little; aquatic or marsh herbs.	
	NAIADALES 21
Endosperm fleshy or horny; ovary superior or inferior.	
	LILIALES 93
Endosperm mealy; ovary superior.....	XYRIDALES 90
Flowers irregular.....	ORCHIDALES 107

Embryo normally with 2 Cotyledons; stem with fibre-vascular bundles in rings; mostly net-veined, flower parts not in threes.

Subclass 2. DICOTYLEDONES 114

Petals distinct to the base or wanting. Series 1. *Choripetalae.*

PETALS NONE.

A. *Flowers not in catkins.*

1. *Ovary and its cells containing many ovules.*

Ovary and pod inferior.	
Six-celled; stamens 6-12.....	ARISTOLOCHIALES 127
Four-celled; stamens 4.....	LUDWIGIA IN MYRTALES 232
One-celled, with parietal placentæ..	CHRYSOPLANTUM IN ROSALES 170
Ovary and pod wholly naked (no calyx)...	PODOSTEMON IN ROSALES 168
Ovary and pod superior.	
Five-celled and 5-beaked, opening across the beaks, which fall off at maturity; stamens 10.....	PENTHORUM IN ROSALES 168
Three-celled and 3-valved, or 3-5-celled and circumscissile.	
	AIZOACEAE IN CHENOPODIALES 132
Two-celled or 1-celled; placentæ central.	
Stamens inserted on the throat or tube of the calyx.	
	LYTHRACEAE IN MYRTALES 230
Stamens inserted on the receptacle or base of the calyx.	
	GLAUX IN PRIMULALES* 252
One-celled, with one parietal placenta or	} RANUNCULACEAE IN RANALES 143
Ovaries 2 or more, separate, simple.	

2. *Ovary or its cells containing 1 or 2, rarely 3 or 4, ovules.*

**Pistils more than one, and distinct or nearly so.*

Stamens inserted on the calyx; leaves with stipules.	
	SANGUISORBA IN ROSALES 178
Stamens inserted on the receptacle.	
Leaves punctate with pellucid dots.	
	XANTHOXYLUM IN GERANIALES 209
Leaves not dotted.	
Calyx present and usually petal-like.	
	RANUNCULACEAE IN RANALES 143
Calyx absent; flowers entirely naked, perfect, spiked.	
	PIPERALES 114

***Pistil one, either simple or compound.*

Ovary wholly inferior.	
Aquatic herbs; ovary 3-4-celled..	HALORAGIDACEAE IN MYRTALES 230
Mostly woody plants; style or stigma one, entire, ovary 1-celled.	
Stigma running down one side of the style.	
	NYSSA IN UMBELLALES 244
Stigma terminal, with or without a style.....	SANTALALES 127
Ovary really free from the calyx, but permanently invested by its tube, or the base of it, so as to seem inferior.	

GENERAL KEY.

iii

- Shrubs with scurfy leaves; flowers mostly dioecious.
ELAEAGNACEAE IN THYMELEALES 229
- Herbs, with the calyx colored like a corolla.
Leaves opposite, simple.
NYCTAGINACEAE IN CHENOPODIALES 132
- Leaves alternate, pinnate.....SANGUISORBA IN ROSALES 178
- Ovary plainly free from the calyx, which is sometimes wanting.
Stipules sheathing the stem at the nodes.
Trees, calyx none; flowers monœcious, in heads.
PLATANACEAE IN ROSALES 167
- Herbs; calyx present and commonly petal-like.
POLYGONALES 128
- Stipules not sheathing the stem, or none.
Aquatic herbs, submerged or nearly so.
Leaves whorled and dissected; style single.
CERATOPHYLLACEAE IN RANALES 143
- Leaves opposite, entire; styles 2; ovary 4-celled.
HALORAGIDACEAE IN MYRTALES 230
- Not aquatic herbs.
Ovary 10-celled; berry 10-seeded.
PHYTOLACCACEAE IN CHENOPODIALES 132
- Ovary 3- (rarely 1-2-) celled; juice usually milky.
EUPHORBIACEAE IN GERANIALES 205
- Ovary 1-celled; juice not milky.
Style, if any, and stigma only 1; leaves simple; no
scarious bracts around the flowers...URTICALES 124
- Styles or stigmas 2 or 3; embryo coiled or curved.
Stipules not scarious; leaves palmately cleft or
palmately compound.
CANNABIS AND HUMULUS IN URTICALES 126
- Stipules scarious or none...CHENOPODIALES 132
- Shrubs or trees.
Ovules, a pair in each cell of the ovary.
Fruit 2-celled, a double samara.
ACERACEAE IN SAPINDALES 214
- Fruit a 1-celled and 1-seeded samara or a drupe.
OLEACEAE IN GENTIANALES 253
- Ovules single, in each cell of the
Three-9-celled ovary; leaves heath-like.
EMPETRACEAE IN SAPINDALES 214
- Three-celled ovary; leaves broad.
RHAMNACEAE IN RHAMNALES 218
- One-2-celled ovary; styles or stigmas 2-cleft.
URTICALES 124
- One-celled ovary; style and stigma single and entire.
Anthers opening longitudinally.
THYMELEACEAE IN THYMELEALES 229
- Anthers opening by uplifted valves.
LAURACEAE IN RANALES 143
- B. *Flowers monoecious or dioecious, one or both sorts in catkins.*
I. Only one sort of flowers in catkins or catkin-like heads.
Fertile flowers in a short catkin, head or strobile.....URTICALES 124
- Fertile flowers single or clustered; sterile in slender catkins (except
Fagus).
Leaves pinnate; fertile flowers and fruit naked.,JUGLANDALES 118
- Leaves simple; fertile flowers 1-3 in an involucre or cup.
FAGALES 119
- 2. Both sterile and fertile flowers in catkins or catkin-like heads.
Ovary and pod 2-celled, many-seeded.....LIQUIDAMBAR IN ROSALES 171

- Ovary and pod 1-celled, many-seeded; seeds furnished with a downy tuft at one end.....SALICALES 114
- Ovary 1-2-celled, only one ovule in each cell; fruit 1-seeded.
- Parasitic on trees.....LORANTHACEAE IN SANTALALES 127
- Trees or shrubs, not parasitic.
- Calyx regular, in the fertile flowers succulent in fruit.
- URTICALES 124
- Calyx none, or rudimentary and scale-like.
- Fertile flowers 2 or 3 at each scale of the catkin.
- FAGALES 119
- Fertile flowers single under each scale; nutlets naked, waxy-coated or drupe-like.....MYRICALES 118

PETALS PRESENT.

A. *Stamens numerous, at least more than 10, and more than twice the sepals or lobes of the calyx.*1. *Ovary superior, i. e., calyx entirely free and separate from the pistil or pistils.*

- Pistils numerous but cohering over each other in a solid mass on an elongated receptacle.....MAGNOLIACEAE IN RANALES 143
- Pistils numerous, separate, but concealed in a hollow receptacle.
- Leaves opposite, entire, no stipules.
- CALYCANTHACEAE IN RANALES 143
- Leaves alternate, with stipules.....ROSA IN ROSALES 178
- Pistils several, immersed in hollows of the upper surface of a large top-shaped receptacle.....NELUMBO IN RANALES 145
- Pistils more than one, separate, not enclosed in the receptacle.
- Stamens distinct, inserted on the calyx..ROSACEAE IN ROSALES 167
- Stamens inserted on the receptacle.....RANALES 143
- Pistils several-lobed; the ovaries united below the middle.
- RESEDACEAE IN PAPAVERALES 154
- Pistil one as to ovary; the styles or stigmas may be several.
- Leaves punctate with transparent dots.
- HYPERICACEAE IN PARIETALES 222
- Leaves not punctate with transparent dots.
- Ovary simple, 1-celled, 2-ovuled...DRUPACEAE IN ROSALES 167
- Ovary simple, 1-celled, with 1 parietal many-ovuled placenta.
- RANALES 143
- Ovary compound, 1-celled, with a central placenta.
- PORTULACACEAE IN CHENOPODIALES 132
- Ovary compound, 1-celled, with 2 or more parietal placentæ.
- Calyx deciduous.....PAPAVERALES 154
- Calyx persistent, of 3-5 sepals.
- CISTACEAE IN PARIETALES 222
- Ovary compound, several-celled.
- Calyx valvate in the bud.....MALVALES 220
- Calyx imbricated in the bud, persistent.
- Shrubs, stamens on the base of the petals.
- THEACEAE IN PARIETALES 222
- Aquatic or marsh herbs; ovaries many.
- On 5 placentæ in the axis.
- SARRACENIACEAE IN SARRACENIALES 166
- On the 8-30 partitions.
- NYMPHAEACEAE IN RANALES 143

2. *Ovary more or less inferior, i. e., calyx more or less coherent with the surface of the compound ovary.*

- Ovary 8-30-celled; ovules many, on the partitions; aquatic.
- NYMPHAEACEAE IN RANALES 143

GENERAL KEY.

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Ovary 10-celled, cells 1-ovuled.....	AMELANCHIER IN ROSALES	180
Ovary 2-5-celled.		
Leaves alternate, with stipules; or opposite, without stipules.	ROSALLES	167
Leaves alternate, without stipules..	STYRACACEAE IN EBENALES*	252
Ovary 1-celled, with the ovules parietal.....	OPUNTIALES	229
Ovary 1-celled, with the ovules rising from the base.	PORTULACACEAE IN CHENOPODIALES	132
<i>B. Stamens of the same number as the petals and opposite them.</i>		
Pistils 3-6, separate; flowers dioecious, woody vines.	MENISPERMACEAE IN RANALES	143
Pistil only one.		
Ovary 1-celled; anthers opening by uplifted valves.	BERBERIDACEAE IN RANALES	143
Ovary 1-celled; anthers not opening by uplifted valves.		
Style and stigma 1; ovules more than 1.	PRIMULACEAE IN PRIMULALES*	250
Style 1; stigmas 3; sepals 2; ovules several.	PORTULACACEAE IN CHENOPODIALES	132
Style twice or thrice forked; flowers monœcious.	CROTONOPSIS IN GERANIALES	211
Styles 5; ovule and seed only 1.	PLUMBAGINACEAE IN PRIMULALES*	250
Ovary 2-4-celled.....	RHAMNALES	218
<i>C. Stamens not more than twice as many as the petals, when just of the same number, then alternate with them.</i>		
1. Calyx free from the ovary, i. e., ovary wholly superior.		
*Ovaries 2 or more, separate.		
Stamens united with each other and with a large, thick stigma common to the 2 ovaries.....	ASCLEPIADACEAE IN GENTIANALES	253
Stamens unconnected, on the receptacle, free from the calyx.		
Leaves punctate with pellucid dots..	RUTACEAE IN GERANIALES	205
Leaves not pellucid-punctate.		
Trees, with pinnate leaves....	AILANTHUS IN GERANIALES	209
Low shrub, with pinnate leaves or herbs, not fleshy.	RANUNCULACEAE IN RANALES	143
Herbs, with thick, fleshy leaves..	CRASSULACEAE IN ROSALES	167
Stamens unconnected, inserted on the calyx.....	ROSALLES	167
**Ovaries 2-5, somewhat united at base, separate above.		
The carpels fewer than the petals.....	SAXIFRAGACEAE IN ROSALES	167
***Ovaries or lobes of ovary 3-5, with a common style.	GERANIACEAE IN GERANIALES	205
****Ovary only 1, and		
Simple, with one parietal placenta....	PAPILIONACEAE IN ROSALES	167
Compound, as shown by the number of cells, placentæ, styles and stigmas.		
Ovary 1-celled.		
Corolla irregular; petals 4; stamens 6.	PAPAVERACEAE IN PAPAVERALES	154
Corolla irregular; petals and stamens 5.	VIOLACEAE IN PARIETALES	222
Corolla regular or nearly so.		
Ovule solitary; shrubs or trees; stigmas 3.	ANACARDIACEAE IN SAPINDALES	214

Ovules more than 1, in center or bottom of cell.	
Petals not inserted on the calyx.	
CARYOPHYLLACEAE IN CHENOPODIALES	132
Petals inserted on the throat of a bell-shaped or tubular calyx.....	LYTHRACEAE IN MYRTALES 230
Ovules several or many, on 2 or more parietal placentaë.	
Leaves punctate with pellucid and dark dots.	
HYPERICACEAE IN PARIETALES	222
Leaves beset with reddish, gland-tipped bristles.	
DROSERACEAE IN SARRACENIALES	166
Leaves neither punctate nor bristly-glandular.	
Sepals 5, very unequal, or only 3.	
CISTACEAE IN PARIETALES	222
Sepals and petals 5; stamens 5 or 10.	
SAXIFRAGACEAE IN ROSALES	167
Ovary 2-several-celled.	
Flowers irregular.	
Anthers opening at the top.	POLYGALACEAE IN GERANIALES 205
Anthers opening lengthwise.	
Stamens 12; petals 6 on the throat of a tubular inflated or gibbous calyx.....	PARSONSIA IN MYRTALES 231
Stamens 5-8 or 10; petals hypogynous or nearly so.	
SAPINDALES	214
Flowers regular or nearly so.	
Stamens neither just as many nor twice as many as the petals.	
Triadelphous; petals 5.	HYPERICACEAE IN PARIETALES 222
Tetradynamous (or rarely only 2 or 4); petals 4; pungent herbs.....	CRUCIFERAE IN PAPAVERALES 154
Distinct and fewer than the 4 petals.	
OLEACEAE IN GENTIANALES	253
Stamens just as many or twice as many as the petals.	
Ovules and seeds only 1 or 2 in each cell.	
Herbs.....	GERANIALES 205
Shrubs or trees.	
Leaves 3-foliolate, pellucid-punctate.	
PTELEA IN GERANIALES	209
Leaves simple, not punctate.	SAPINDALES 214
Ovules (and usually seeds) several or many in each cell.	
Stipules between the opposite and simple leaves.	
ELATINACEAE IN PARIETALES	222
Stipules between the opposite and compound leaves (caducous).....	STAPHYLEA IN SAPINDALES 217
Stipules none when the leaves are opposite.	
Stamens 10, monadelphous at base; leaflets 3, inversely heart-shaped.	
OXALIS IN GERANIALES	207
Stamens distinct, free from calyx.	
Style 1, undivided.	
ERICACEAE IN ERICALES*	244
Styles 2-5, separate.	
CARYOPHYLLACEAE IN CHENOPODIALES	132
Stamens distinct, inserted on the calyx.	
Styles 2 (or 3), or splitting into 2 in fruit.	
SAXIFRAGACEAE IN ROSALES	167
Style 1; pod in the calyx 1-celled.	
LYTHRACEAE IN MYRTALES	230
2. Calyx-tube adherent to the ovary, at least to its lower half.	
Tendrill-bearing and often succulent herbs.	
CUCURBITACEAE IN CAMPANULALES*	305
Not tendrill-bearing.	

GENERAL KEY.

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Ovules and seeds more than 1 in each cell.	
Ovary 1-celled.	
Herbs.....	SAXIFRAGACEAE IN ROSALES 167
Shrubs.....	GROSSULARIACEAE IN ROSALES 167
Ovary 2-several-celled.	
Anthers opening by pores at the apex; style 1.	
	MELASTOMACEAE IN MYRTALES 230
Anthers not opening by pores.	
Stamens on a flat disk which covers the ovary.	
	CELASTRACEAE IN SAPINDALES 214
Stamens inserted on the calyx.	
Eight or 4 (rarely 5); style 1.	
	ONAGRACEAE IN MYRTALES 230
Five or 10; styles 2-3, distinct.	
	SAXIFRAGACEAE IN ROSALES 167
Ovule and seed only 1 in each cell.	
Stamens 2-8; styles 1-4; herbs or aquatic plants..	
	MYRTALES 230
Perfect stamens 4; styles 2; shrub.	
	HAMAMELIDACEAE IN ROSALES 167
Stamens 4; style and stigma 1; chiefly shrubs.	
	CORNACEAE IN UMBELLALES 235
Stamens 5; flowers in umbels, or rarely in heads.	
	UMBELLALES 235
<i>Petals more or less united.</i>	
<i>Series 2. Gamopetalae.</i>	
<i>A. Stamens more numerous than the lobes of the corolla.</i>	
Ovary 1-celled with 1 parietal placenta..	
	PAPILIONACEAE IN ROSALES* 167
Ovary 1-celled with 2 parietal placentæ.	
	ADLUMIA IN PAPAVERALES* 166
Ovary 2-celled with a single ovule in each cell.	
	POLYGALACEAE IN GERANIALES* 205
Ovary 3-many-celled.	
Stamens free or nearly free from the corolla; style single.	
	ERICALES 244
Stamens free from the corolla; style 5.	
	OXALIS IN GERANIALES* 207
Stamens inserted on the base or tube of the corolla.	
Filaments monadelphous; anthers 1-celled, kidney-shaped.	
	MALVACEAE IN MALVALES* 220
Filaments 1-5-adelphous at base, anthers 2-celled.	
Calyx free from the ovary..	
	THEACEAE IN PARIETALES* 222
Calyx coherent with the ovary, or with its base.	
	STYRACACEAE IN EBENALES 252
Filaments wholly distinct; calyx free, persistent.	
	EBENACEAE IN EBENALES 252
Filaments in pairs at each sinus; anthers 1-celled.	
	CAPRIFOLIACEAE IN RUBIALES 298
<i>B. Stamens (fertile ones) as many as the lobes of the corolla and opposite them.....</i>	
	PRIMULALES 250
<i>C. Stamens as many as the lobes of the corolla and alternate with them or fewer.</i>	
<i>1. Ovary inferior.</i>	
Tendrill-bearing herbs; anthers often united.	
	CUCURBITACEAE IN CAMPANULALES 305
Tendrils none.	
Stamens united by their anthers into a ring or tube.	
	CAMPANULALES 305
Stamens separate, free from the corolla or nearly so, as many as its lobes; stipules none; juice usually milky.	
	CAMPANULACEAE IN CAMPANULALES 305

- Stamens separate, inserted on the corolla.**
 One-3, always fewer than the corolla-lobes.
 VALERIANACEAE IN VALERIANALES 304
 Four or 5; leaves opposite or whorled.
 Ovary 1-celled; flowers in a dense involucrate head.
 DIPSACACEAE IN VALERIANALES 304
 Ovary 2-5-celled.....**RUBIALES 298**
- 2. Ovary superior.**
Corolla irregular; stamens with anthers 4 and didynamous or only 2.
 POLEMONIALES 262
Corolla somewhat irregular; stamens with anthers, 5.
 Stamens free from the corolla; anthers with their cells opening by
 a hole or chink at the top.....**AZALEA IN ERICALES 246**
 Stamens inserted on the corolla.
 Ovary deeply 4-lobed around the style.
 ECHIU IN POLEMONIALES 271
 Ovary not lobed; pod many-seeded.
 Filaments, or some of them, woolly.
 VERBASCUM IN POLEMONIALES 286
 Filaments not woolly.
 HYOSCYAMUS IN POLEMONIALES 285
- Corolla regular.**
 A. *Stamens as many as the lobes of the corolla.*
 Ovaries 2, separate.....**GENTIANALES 253**
 Ovary 1, but deeply 4-lobed around the style.....**POLEMONIALES 262**
 Ovary 1, not deeply lobed.
 One-celled, with ovules parietal or on 2 parietal placenta.
 Leaves (or in *Menyanthes* 3 leaflets) entire.
 GENTIANACEAE IN GENTIANALES 253
 Leaves toothed, lobed or pinnately compound.
 HYDROPHYLLACEAE IN POLEMONIALES 262
 Two-10-celled.
 Leafless parasitic twining plants.
 CUSCUTA IN POLEMONIALES 264
 Leaves opposite, their bases or petioles connected by stipules
 or stipular line.....**LOGANIACEAE IN GENTIANALES 253**
 Leaves when opposite without stipules.
 Stamens free from corolla or nearly so; style 1.
 ERICACEAE IN ERICALES 244
 Stamens almost free from the corolla; style none.
 ILICACEAE IN SAPINDALES* 214
 Stamens in the sinuses of the corolla; style 1.
 DIAPENSIACEAE IN ERICALES 244
 Stamens inserted on the tube of the corolla.
 Four; pod 2-celled, circumscissile.
 PLANTAGINACEAE IN PLANTAGINALES 297
 Four; ovary 2-4-celled, ovules solitary.
 VERBENACEAE IN POLEMONIALES 262
 Five or rarely more.....**POLEMONIALES 262**
- B. *Stamens fewer than the lobes of the corolla.*
 Stamens 4, didynamous.....**POLEMONIALES 262**
 Stamens only 2 with anthers, ovary 4-lobed.
 LYCOPUS IN POLEMONIALES 280
 Stamens 2, rarely 3; ovary 2-celled.
 Herbs with the corolla rotate, or somewhat funnel-form, and
 slightly irregular.....**VERONICA IN POLEMONIALES 290**
 Shrubs or trees, corolla perfectly regular.
 OLEACEAE IN GENTIANALES 253

Subkingdom PTERIDOPHYTA.

Order I. FILICALES.

Vernation erect or inclined; sporanges in spikes or panicles, opening by a transverse slit. Fam. 1. *Ophioglossaceae*.

Vernation coiled; sporanges reticulated, with annulus (rudimentary in Fam. 2).

Sporanges opening vertically.

Sporanges panicle, with rudimentary ring; marsh ferns.

Fam. 2. *Osmundaceae*.

Sporanges ovoid, in panicles or spikes, with a vertical ring.

Fam. 3. *Schizaeaceae*.

Sporanges opening transversely, provided with a vertical ring, borne in sori on the back or margin of the leaf. Fam. 4. *Polypodiaceae*.

Family 1. OPHIOGLOSSACEAE Presl. Adder's Tongue Family.

Veins reticulate; sporanges cohering in a distichous spike. 1. *Ophioglossum*.

Veins free; sporanges distinct, borne in spikes or panicles. 2. *Botrychium*.

1. OPHIOGLOSSUM L. ADDER'S TONGUE.

Leaves ovate to elliptic, large; basal veins 9-13 or more. 1. *O. vulgatum*.

Leaf lanceolate, small; basal veins 5-7. 2. *O. arenarium*.

1. OPHIOGLOSSUM VULGATUM L. Common Adder's Tongue. M. p. 2. Bogs and pastures. Summer.

Bucks—Woodbourne (Cr), Durham, Ruth (Fr.), Solebury Twp. (Ws.).

Delaware—Haverford (C. E. S.), N. W. part of the county, Dr. Geo. Smith (Fu.). Chester—(P.). Lancaster—Fulton Twp. (Pr.). Berks—Hamburg (Br.) (Cr.) (Ke.).

Burlington—Medford (Br.), Brown Mills, Hanover (C.). Salem—Riddleton, Middlesex, Woodbridge (C.).

New Castle—Brandywine, Tatnall; Dixons, Commons; Iron Hill, Canby.

2. OPHIOGLOSSUM ARENARIUM E. G. Britton. M. p. 2. Sandy soil. Summer.

Cape May—Near Wildwood.

2. BOTRYCHIUM Sw. MOONWORT.

Bud for the following year enclosed in the base of the stem.

Leaf rising above the middle of the stem, small plants maturing in early summer. 1. *B. matricariaefolium*.

Leaf rising from little above rootstock.

Vernation wholly straight; bud smooth; leaf entire or 2-6-lobed.

2. *B. simplex*.

Vernation inclined; bud pilose; leaf ample, ternate.

Leaf segments obliquely ovate or oblong; large, 1-2 cm. long.

3. *B. obliquum*.

Leaf segments lacinate; narrow, 1 mm. or less wide.

Bud enclosed in a cavity at one side of the base of the stem; leaf ternate, decomposed, sessile at the middle of the stem. 4. *B. dissectum*. 5. *B. Virginianum*.

1. *BOTRYCHIUM MATRICARIAEFOLIUM* A. Br. M. p. 3. Moist woods. Early summer.

Delaware—Swarthmore (Ca.).

Salem—Riddleton (Le.) (Li.).

2. *BOTRYCHIUM SIMPLEX* E. Hitchcock. M. p. 3. Moist woods, meadows and swamps. Spring.

Northampton—Easton (P.).

3. *BOTRYCHIUM OBLIQUUM* Muhl. M. p. 3. Low woods and open places. Summer.

4. *BOTRYCHIUM DISSECTUM* Spreng. M. p. 3. Woods and open places. Summer.

5. *BOTRYCHIUM VIRGINIANUM* (L.) Sw. M. p. 4. Rich woods. Summer.

Family 2. OSMUNDACEAE R. Br.

1. OSMUNDA L. FLOWERING FERN.

Leaves bipinnate, fertile at apex.

1. *O. regalis*.

Sterile leaves bipinnatifid.

Pinnæ of sterile leaf with a tuft of tomentum at base; fertile leaf distinct from sterile.

2. *O. cinnamomea*.

Pinnæ of sterile leaf without a tuft of tomentum at base; leaves fertile in the middle.

3. *O. Claytoniana*.

1. *OSMUNDA REGALIS* L. *Royal Fern*. M. p. 4. Swamps and wet woods. Spring.

2. *OSMUNDA CINNAMOMEA* L. *Cinnamon Fern*. M. p. 4. Wet places. Spring.

3. *OSMUNDA CLAYTONIANA* L. M. p. 4. Moist places. Spring.

Family 3. SCHIZAEACEAE Reichenb.

Sporanges in close 2-ranked spikes; leaves filiform or linear.

1. *Schizaea*.

Sporanges in ample panicles; pinnules palmate.

2. *Lygodium*.

1. SCHIZAEA J. E. Smith.

1. *SCHIZAEA PUSILLA* Pursh. M. p. 5. Low ground in pine barrens. Autumn.

Burlington—Quaker Bridge (Fr.) (Pr.), Speedwell (St.), Atsion (Te.). *Atlantic*—Egg Harbor, Pleasant Mills, Hospitality, 8th Street (C.), Absecon (Ja.) (Wn.). *Ocean*—Forked River, Ferago, Kettle Creek (C.), Toms River (Fu.), Island Heights Junction (Mac.).

2. LYGODIUM Sw.

1. *LYGODIUM PALMATUM* (Bernh.) Sw. *Climbing Fern*. M. p. 6. Moist thickets and open woods. Autumn.

Philadelphia—Wissahickon, Dr. Geo. Smith (Fu.). *Bucks*—Yardleyville, L. L. Smith (B. Sm.).

Burlington—Brown Mills, Medford (Br.), Moorestown (C.), Atsion (Sa.), New Lisbon (Te.). *Camden*—East Magnolia, Clementon (Br.), White Horse (C.). *Gloucester*—Tomlin (Wn.). *Mercer*—Highstown, Trenton (C.). *Monmouth*—Matawan, Shark River (C.).

Family 4. POLYPODIACEAE R. Br.

Leaves all flat, or their edges only slightly revolute.

Sori without indusia.

Stipes articulated to the rootstocks; leaves pinnatifid.

1. *Polypodium*.

Stipes not articulated to the rootstocks; leaves 2-3 pinnatifid.

11. *Phegopteris*.

Sori with marginal indusia formed of the more or less altered edge of the leaf.

Sporanges at the ends of veins, borne on a reflexed portion of the leaf.

2. *Adiantum*.

Sporanges borne on a continuous vein-like receptacle which connects the apices of the veins.

3. *Pteridium*.

Sporanges at or near the ends of unconnected veins.

Sori mostly forming a continuous indusium around the segment.

4. *Pellaea*.

Sori minute; indusium usually interrupted, if continuous the segments small and bead-like.

5. *Cheilanthes*.

Sori dorsal or marginal, provided with special indusia.

Sori linear or oblong; indusia more than twice as long as broad.

Sori in chain-like rows parallel to the midribs or rachises.

6. *Woodwardia*.

Sori all oblique to the midrib or rachises; veins free.

7. *Asplenium*.

Sori partly parallel to the midrib, partly oblique; veins united.

8. *Camptosorus*.

Sori roundish, indusia less than twice as long as broad.

Indusium superior.

Indusium orbicular, peltate, fixed by the centre.

9. *Polystichum*.

Indusium reniform or orbicular with a narrow sinus by which it is attached to the leaf.

10. *Dryopteris*.

Indusium delicate, partly inferior, fixed by a broad base and enclosing the sorus like a hood.

12. *Filix*.

Indusium wholly inferior.

Indusium roundish or stellate.

13. *Woodsia*.

Indusium cup-shaped or somewhat 2-valved.

14. *Dennstaedtia*.

Spore-bearing leaves closely rolled together with necklace-like segments.

Leaves with free veins; rootstock stout, erect.

15. *Matteuccia*.

Leaves with anastomosing veins; rootstocks creeping with scattered leaves.

16. *Onoclea*.

1. POLYPODIUM L.

1. POLYPODIUM VULGARE L. *Polypody*. M. p. 7. Rocks. Summer.

Common within the range except South New Jersey.

Burlington—Vincentown (C.). *Camden*—Delaware below Gloucester (C.).

2. ADIANTUM L.

1. ADIANTUM PEDATUM L. *Maidenhair*. M. p. 8. Woods. Summer.

3. *PTERIDIUM* Scop. BRAKE or BRACKEN.

1. *PTERIDIUM AQUILINUM* (L.) Kuhn. *Common Brake*. M. p. 8. Thickets and hillsides. Summer.

4. *PELLAEA* Link.

1. *PELLAEA ATROPURPUREA* (L.) Link. *Cliff Brake*. M. p. 9. Rocks, preferring limestone. Summer.
Philadelphia—Shawmont (Sa.). *Bucks*—Nockamixon. *Montgomery*—Lafayette, Ivy Rock, Conshohocken (Re.). *Chester*—Phoenixville (Sa.). *Lancaster*—(P.). *Berks*—Reading (Wn.). *Lehigh*—Rockdale (Kr.). *Northampton*—Easton, *Porter* (B. C.). *Dauphin*—Harrisburg (Wn.).

5. *CHEILANTHES* Sw.

1. *CHEILANTHES LANOSA* (Michx.) Watt. *Lip Fern*. M. p. 9. Rocks. Summer.
Bucks—Pipersville, Sellersville (Fr.), Zieglersville (Je.), Nockamixon (Le.), Neshaminy (Re.) (Ws.). *Montgomery*—Valley Forge, I. Burk (He.), Mill Creek (C. E. S.), Lafayette (Te.). *Delaware*—West of Holland's Bridge, Dr. Geo. Smith (Fu.). *Chester*—Phoenixville (Sa.), Greentree (Te.). *Lancaster*—Octoraro Creek, near Maryland line (Pr.), Safe Harbor, Tucquan (Br.). *Berks*—Reading (P.). *Northampton*—Easton (P.).
Hunterdon—Lambertville, Milford (C.).
New Castle—Below Jessups, opposite Rockford.

6. *WOODWARDIA* J. E. Smith. CHAIN FERN.

Leaves uniform; veins free between the sori and the margin.

1. *W. Virginica*.

Leaves of two kinds; veins everywhere anastomosing.

2. *W. areolata*.

1. *WOODWARDIA VIRGINICA* (L.) J. E. Smith. M. p. 10. Swamps. Summer.
Bucks—Tullytown (Cr.) (Wn.), Bristol (Fr.). *Delaware*—Tinicum. *Northampton*—Moore Twp. (P.). *Burlington*—Taunton (Sts.), Pemberton (Te.). *Camden*—Winslow, Mart. (B. C.). *Gloucester*—Paulsboro (Ja.), Mickleton (He.), Woodbury (Je.), Swedesboro, Repaupo (Li.). *Cape May*—Sea Isle Junction (Sa.). *Atlantic*—Egg Harbor (Le.) (U. C. S.), May's Landing (Te.). *Monmouth*—Ocean Beach, between Deal and Elberon (C.), Asbury Park (Te.). *Mercer*—Trenton (C.).
New Castle—Cedar Swamp, Collins.
2. *WOODWARDIA AREOLATA* (L.) Moore. M. p. 10. Swamps and wet woods. Summer.
Bucks—Tullytown (Cr.) (Wn.). *Delaware*—Tinicum.
New Jersey—Common.
New Castle—Not rare.

7. *ASPLENIUM* L. SPLEENWORT.

Sori straight or rarely slightly curved, attached to the upper side of a vein, small (except 5).

Leaves pinnatifid or pinnate below, tapering to a point.

Stipes blackish below; lobes rounded or the lowest acuminate.

1. *A. pinnatifidum*.

Stipes blackish throughout; lobes acute or acuminate.

2. *A. ebenoides*.

Leaves once pinnate.

Pinnæ 7 mm. to 8 cm. long, mostly blunt.

Pinnæ auricled at upper side of base. 3. *A. platyneuron*.

Pinnæ not auricled, partly alternate, partly opposite.

4. *A. Trichomanes*.

Pinnæ 5-12 cm. long, acute or acuminate.

5. *A. angustifolium*.

Leaves 2-3 pinnatifid.

Stipes green; leaves ovate-deltoid; pinnales fan-shaped, veins flabellate.

6. *A. Ruta-muraria*.

Stipes dark at the base, green above.

7. *A. montanum*.

Stipes chestnut-brown throughout, as also the lower part of the rachis.

8. *A. Bradleyi*.

Sori usually more or less curved, sometimes horseshoe-shaped, often crossing to the outer or lower side of the veinlet; large ferns.

Leaves 2-pinnatifid, segments blunt, scarcely crenate.

9. *A. acrostichoides*.

Leaves 2-pinnate; pinnales acute, toothed or pinnatifid.

10. *A. Filix-foemina*.

1. ASPLENIUM PINNATIFIDUM Nutt. M. p. 11. Rocks. Summer.

Philadelphia—Wissahickon, Mart. (B. C.), Falls of Schuylkill (Je.). Delaware—Ridley Creek, T. C. Palmer (Fu.). Lancaster—York Furnace, Tucquan, Georgetown (P.).

2. ASPLENIUM EBENOIDES R. R. Scott. M. p. 11. Limestone. Summer.

Montgomery—East side Schuylkill (C. E. S.); Lancaster—York Furnace (Cr.). Lehigh—(P.). Northampton—Glendon (P.).

3. ASPLENIUM PLATYNEURON (L.) Oakes. M. p. 11. Rocky open woods. Summer.

4. ASPLENIUM TRICHOMANES L. M. p. 11. Shaded cliffs. Summer.

5. ASPLENIUM ANGUSTIFOLIUM Michx. M. p. 12. Rich woods. Autumn.

Philadelphia—Manayunk (Gi.). Lancaster—Peach Bottom. Berks—Reading (P.).

6. ASPLENIUM RUTA-MURARIA L. M. p. 12. Limestone cliffs. Summer.

Bucks—Riegelsville (Fr.). Montgomery—Conshohocken (C. E. S.). Chester—Brook's Mill (Fl. C.). Lancaster—Millersville (Cr.). Lehigh—Helfrich's Springs (Kr.). Northampton—Easton, Porter (B. C.).

7. ASPLENIUM MONTANUM Willd. M. p. 12. Rocks. Summer.

Chester—Octoraro Creek (Le.) (St.). Lancaster—York Furnace, Tucquan (Ca.) (Sa.), Fites Eddy (St.). Lehigh—Idlewild (Kr.). Northampton—Easton (P.).

8. ASPLENIUM BRADLEYI D. C. Eaton. M. p. 12. Rocks. Summer.

Lancaster—Tucquan, near Muddy Run (Br.).

9. ASPLENIUM ACROSTICHOIDES Sw. M. p. 12. Rich woods. Summer.

10. ASPLENIUM FILIX-FOEMINA (L.) Bernh. M. p. 12. In woods, thickets and along fences. Summer.

8. CAMPTOSORUS Link.

1. CAMPTOSORUS RHIZOPHYLLUS (L.) Link. Walking Fern. M. p. 13. Shaded rocks. Summer.

Philadelphia—Byberry, Mart. (B. C.), above Manayunk (He.), Wissa-

hickon (Re.) (Te.), Shawmont (Sa.), Lafayette (Te.). *Bucks*—Argus (Fr.) (Ja.), Zieglersville (Je.), Sumneytown (VP.), Neshaminy, Rushland, Center Bridge (Ws.). *Montgomery*—Lafayette (Wn.). *Delaware*—Rockdale, Glen Mills, Ridley Creek, Whiskey Run (Fu.), Swarthmore (Pe.), Columbine Rocks, Haverford, Mount Misery, Lenni (B. Sm.), Concord (W. Tr.), Chad's Ford (Wn.). *Chester*—Valley Forge (Ke.), near Mortonville (St.). *Lancaster*—York Furnace. *Lehigh*—Saegersville, P. A. Lantz (B. C.), Coplay (Kr.). *Northampton*—Above Easton, Porter (B. C.).

Mercer—Princeton (Te.). *Hunterdon*—Rosemont, Lambertville, Milford (C.).

New Castle—Jessups, Mount Cuba, etc.

9. POLYSTICHUM Roth.

1. POLYSTICHUM ACROSTICHOIDES (Michx.) Schott. *Christmas Fern*. M. p. 14. Rocky woods. Summer.

10. DRYOPTERIS Adans. SHIELD FERN.

Texture thin-membranous; veins simple or once forked; leaves pinnatifid. Lower pinnæ very much reduced. 1. *D. Noveboracensis*.

Lower pinnæ little smaller than the middle ones.

Veins 1-2-forked; sori crowded, 10-12 to a segment.

Veins simple; sori larger, distant 4-10 to a segment. 2. *D. Thelypteris*.

3. *D. simulata*.

Texture firmer, sometimes subcoriaceous; veins forking freely.

Leaves 2-pinnatifid or 2-pinnate; segments not spinulose.

Indusia large, thinnish, flat.

Pinnæ widest at base.

Pinnæ widest at middle.

Indusia convex, without marginal glands.

Leaves 2-pinnate or 3-pinnatifid; segments spinulose-toothed.

Leaves ovate-lanceolate, usually not narrowed below; scales of the stipe usually with dark centre. 7. *D. spinulosa* var.

Leaves elongated-lanceolate, usually narrowed at the base; scales of stipe pale brown. 8. *D. Boottii*.

1. DRYOPTERIS NOVEBORACENSIS (L.) A. Gray. M. p. 14. Moist woods. Summer.

2. DRYOPTERIS THELYPTERIS (L.) A. Gray. M. p. 14. Marshes. Summer.

3. DRYOPTERIS SIMULATA Davenp. M. p. 15. Damp woods and shaded swamps.

Chester—Paoli (Cr.).

4. DRYOPTERIS CRISTATA (L.) A. Gray. M. p. 15. Swamps and wet woods. Summer.

- 4a. DRYOPTERIS CRISTATA CLINTONIANA (D. C. Eaton) Underw. M. p. 15. Swampy woods. Summer.

Philadelphia—Wynnewood (Re.). *Delaware*—Swarthmore (St.), near Newtown Square (VP.). *Chester*—Willistown Twp. (Pr.). *Northampton*—Bangor (Pr.).

Camden—Little Timber Creek (C.). *Mercer*—Trenton (C.).

New Castle—Near Mount Cuba, *Commons*.

5. *DRYOPTERIS GOLDIEANA* (Hook.) A. Gray. M. p. 15. Rich woods. Summer.

Philadelphia—Wissahickon Creek above Manayunk, *Mart.* (B. C.), Pennypack (Re.). *Bucks*—Springfield (Fr.). *Montgomery*—(P.). *Delaware*—Bishop's Mills (Fu.), Concord (W. Tr.), Middletown (S. Tr.). *Chester*—(P.). *Berks*—Reading (P.). *Lehigh*—Lehigh Mountain (Kr.). *Northampton*—Easton (Ca.).

New Castle—Brandywine, *Tatnall*; Harvey, *Commons and Tatnall*.

6. *DRYOPTERIS MARGINALIS* (L.) A. Gray. M. p. 15. Rocky woods. Summer.

- 7a. *DRYOPTERIS SPINULOSA INTERMEDIA* (Muhl.) Underw. M. p. 16. Woods. Summer.

Pennsylvania—General.

- 7b. *DRYOPTERIS SPINULOSA DILATATA* (Hoffm.) Underw. M. p. 16. Woods. Summer.

Pennsylvania—General.

8. *DRYOPTERIS BOOTHII* (Tuckerm.) Underw. M. p. 16. Moist woods. Summer.

Philadelphia—(P.). *Montgomery*—(P.). *Berks*—Heister (P.).

New Castle—2 miles S. W. of Wilmington, *Commons*.

11. *PHEGopteris* Fée. BEECH FERN.

Leaves triangular, 2-pinnatifid; pinnae sessile, adnate to the winged rachis.

Leaves longer than broad, usually dark green. 1. *P. Phegopteris*.

Leaves as broad as long or broader, usually light green.

2. *P. hexagonoptera*.

Leaves ternate, with the three divisions petioled; rachis wingless.

3. *P. Dryopteris*.

1. *PHEGopteris PHEGopteris* (L.) Underw. M. p. 16. Damp woods. Summer.

Philadelphia—Graver's Lane Station (C. E. S.). *Lehigh*—Laurel Hill (Kr.). *Northampton*—Maston Creek (P.).

2. *PHEGopteris HEXAGONOPTERA* (Michx.) Fée. M. p. 16. Open woods. Summer.

3. *PHEGopteris DRYOPTERIS* (L.) Fée. *Oak Fern*. M. p. 17. Moist woods and swamps. Summer.

Philadelphia—Graver's Lane Station (C. E. S.). *Montgomery*—Rockledge (Br.). *Delaware*—Wallingford (Ca.) (Pr.). *Chester*—(P.). *Lancaster*—Peach Bottom (Cr.) (Le.). *Northampton*—Glendon (P.).

12. *FILIX* Adans. BLADDER FERN.

Leaves broadest at base, long-tapering, bearing bulblets beneath.

1. *F. bulbifera*.

Leaves scarcely broader at base, short-pointed; no bulblets. 2. *F. fragilis*.

1. *FILIX BULBIFERA* (L.) Underw. M. p. 17. Shaded ravines. Summer.

Bucks—Narrowsville, Point Pleasant (Ws.). *Montgomery*—Conshohocken, *E. Durand* (B. C.). *Chester*—Coatesville (Le.) (St.). *Lancaster*—Conestoga (Cr.) (Gi.), Pequea Creek (Pr.). *Lehigh*—Hokendauqua Creek, Rockdale (Kr.). *Northampton*—Wind Gap (He.).

2. *FILIX FRAGILIS* (L.) Underw. M. p. 17. Shaded cliffs and rocky woods. Summer.

General, but not in southern New Jersey except *Burlington*—*Medford* (Br.).

13. *WOODSIA* R. Br.

Indusium minute or evanescent, flat, concealed beneath the sorus, its margin cleft into slender hair-like segments. 1. *W. ilvensis*.

Indusium distinct, at first enclosing the sporanges, splitting into jagged lobes. 2. *W. obtusa*.

1. *WOODSIA ILVENSIS* (L.) R. Br. M. p. 18. Exposed rocks. Summer.
Bucks—*Nockamixon*. *Chester*—*Black Rock* (Fl. C.). *Lehigh*—*Kern's*
Mill, near *Whitehall* (Kr.).
2. *WOODSIA OBTUSA* (Spreng.) Torr. M. p. 18. Rocks. Summer.

14. *DENNSTAEDTIA* Bernh.

1. *DENNSTAEDTIA PUNCTILOBULA* (Michx.) Moore. M. p. 19. Open places. Summer.

15. *MATTEUCCIA* Todaro.

1. *MATTEUCCIA STRUTHIOPTERIS* (L.) Todaro. *Ostrich Fern*. M. p. 19.
 Alluvial soil. Summer.
Philadelphia—*Upper Wissahickon* (Re.). *Bucks*—*Nockamixon*. *Lancaster*—*York Furnace* (Br.). *Lehigh*—*Coplay* (Kr.). *Northampton*—*(P.)*. *Dauphin*—*(P.)*.
Burlington—*Crosswick's Creek* (C.). *Hunterdon*—*Rosemont*, *Bull's Island*, *Frenchtown*, *Lambertville* (C.).

16. *ONOCLEA* L.

1. *ONOCLEA SENSIBILIS* L. *Sensitive Fern*. M. p. 19. Moist soil. Summer.

Order 2. **SALVINIALES.**

Family 1. **MARSILIACEAE** R. Br.

1. *MARSILIA* L.

1. *MARSILIA QUADRIFOLIA* L. M. p. 20. In water. Summer.
Delaware—*Crum Lynn* (Le.).

Order 3. **EQUISETALES.**

Family 1. **EQUISETACEAE** Michx. **Horsetail Family.**

1. *EQUISETUM* L. **HORSETAIL.**

Stems annual; stomata scattered.

Stems of two kinds, the fertile appearing in early spring before the sterile.

Fertile stems simple, soon withering; sheaths of branches of sterile stems 4-toothed. 1. *E. arvense*.

Fertile stems branched when old, only the apex withering. 2. *E. sylvaticum*.

Stems all alike; spores mature in summer; branches simple or none.

Sheaths rather loose; branches usually long; stems bushy below, attenuate upwards.

3. *E. littorale*.

Sheaths appressed; branches usually short.

4. *E. fluviatile*.

Stems perennial, evergreen; spikes tipped with a rigid point; stomata in regular rows.

Stems rough and tuberculate, prominently ridged.

5. *E. hyemale*.

Stems not tuberculate; sheaths enlarged upwards.

6. *E. laevigatum*.

1. *EQUISETUM ARVENSE* L. *Common Horsetail*. M. p. 22. Sandy soil. Early spring.
2. *EQUISETUM SYLVATICUM* L. M. p. 22. Wet, shady places. Spring.
Philadelphia—Tioga Station, *Mart.* (B. C.), Gorgas Station (Je.).
Bucks—Nockamixon (Cr.), Quakertown (Le.), Morrisville (Ws.). *Delaware*—Haverford (B. Sm.), Concord (W. Tr.). *Chester*—Greentree (Pr.). *Lancaster*—(P.). *Lehigh*—Salsburg (Kr.), Lehigh Mountain, Dr. J. B. Brinton (U. C. S.). *Northampton*—(P.).
New Castle—On limestone debris, Hockessin.
3. *EQUISETUM LITTORALE* Kuehl. M. p. 22. Sandy River shores.
Bucks—Point Pleasant (Fr.). *Delaware*—(P.). *Northampton*—Easton (P.). *Lancaster* and *Dauphin*—On the Susquehanna (P.).
4. *EQUISETUM FLUVIATILE* L. M. p. 23. In shallow water. Summer.
Bucks—Nockamixon (He.), Penn Valley (Ja.). *Delaware*—Chester (B. Sm.). *Lehigh*—Slatingsdon (Kr.). *Northampton*—(P.).
Camden—Kaighn's Point (Ja.).
New Castle—Port Penn (Pr.), Holly Oak, *Canby*.
5. *EQUISETUM HYEMALE* L. *Scouring Rush*. M. p. 23. Wet places. Spring.
Bucks—Nockamixon (He.) (Ke.), New Hope (Ws.). *Delaware*—Wawa (Sa.), Ridley Creek, near Media (B. Sm.), Concord (W. Tr.), Wallingford (Wn.). *Chester*—(P.). *Lancaster*—Paradise (St.). *Lehigh*—Coplay (Kr.). *Northampton*—Bethlehem (Pr.).
Burlington—Birmingham, Vincentown (C.), Medford (Sts.). *Gloucester*—Westville (He.) (Wn.). *Salem*—Woodstown (He.) (Li.). *Cumberland*—Millville (Je.). *Monmouth*—Keyport (C.).
New Castle—Noxentown, *Canby*; Kiemensi, Faulkland, Centerville, Commons; Harvey, Tatnall.
6. *EQUISETUM LAEVIGATUM* A. Br. M. p. 23. Along streams and rivers in clay soil.
Northampton—Easton (P.).

Order 4. LYCOPODIALES.

Spores all of one sort and size.

Fam. 1. *Lycopodiaceae*.

Spores of two sizes.

Leaves scale-like, 4-many-ranked, on branching stems.

Fam. 2. *Selaginellaceae*.

Leaves elongated, clustered on a corm-like trunk; aquatic or mud plants.

Fam. 3. *Isoetaceae*.

Family 1. LYCOPODIACEAE Michx. Club-moss Family.

1. LYCOPODIUM L. CLUB-MOSS.

Sporanges borne in the axils of leaves, which are similar to those of the stem.

- Sporanges mostly wanting in the axils of the upper, mostly 8-ranked leaves. 1. *L. lucidulum*.
 Sporanges only in the axils of the upper leaves, forming terminal spikes; leaves many-ranked.
 Plant slender; leaves acute, soft, mostly entire. 2. *L. inundatum*.
 Plant stout; leaves narrow, spinulose-pointed, bristle-toothed below the middle. 3. *L. alopecuroides*.
 Sporanges borne in the axils of yellowish ovate or cordate scale-like leaves, which are very unlike those of the sterile stems.
 Stems leafy up to the base of the spike or nearly so. 4. *L. obscurum*.
 Fertile branches with minute leaves so that the spikes appear long-peduncled.
 Leaves uniform, many-ranked; stems terete. 5. *L. clavatum*.
 Leaves of 2 forms, few-ranked; stems flattened.
 Sterile stems entirely creeping; spikes solitary. 6. *L. Carolinianum*.
 Sterile stems with fan-like ascending branches; spikes clustered. 7. *L. complanatum*.
1. LYCOPODIUM LUCIDULUM Michx. M. p. 24. Cold, damp woods. Summer.
 2. LYCOPODIUM INUNDATUM L. M. p. 25. Sandy bogs. Summer.
Bucks—Tullytown (Fr.). *Delaware*—Tinicum, Dr. Geo. Smith (Fu.).
New Jersey—Common in the pine barrens.
 - 2a. LYCOPODIUM INUNDATUM BIGELOVII Tuckerm. M. p. 25. Low grounds.
Delaware—Tinicum (P.).
 3. LYCOPODIUM ALOPECUROIDES L. M. p. 25. Pine-barren swamps. Summer.
Bucks—Tullytown (Fr.). *Delaware*—Tinicum, Dr. Geo. Smith (Fu.).
New Jersey—Common in the pine barrens.
New Castle—Thompsons, Ogletown, etc.
 4. LYCOPODIUM OBSCURUM L. M. p. 25. Moist woods. Summer.
Philadelphia—Wissahickon (VP.). *Delaware*—Swarthmore (Ws.).
Chester—(P.). *Lancaster*—(P.). *Northampton*—(P.).
Burlington—Moorestown, New Lisbon (C.). *Camden*—Camden, Atco (C.), Clementon (VP.). *Gloucester*—Swedesboro (Li.). *Salem*—Woodstown (Wa.). *Atlantic*—Hammonton (C.).
New Castle—Scarce.
 5. LYCOPODIUM CLAVATUM L. M. p. 25. Woods. Summer.
Bucks—Milford Twp., Moyer (P.). *Montgomery*—Abundant at Jenkintown (Ws.). *Delaware*—Lansdowne (Pe.), Valley of Darby Creek (B. Sm.), Tinicum (W. Tr.). *Chester*—(P.). *Lancaster*—(P.).
Gloucester—Mickleton (C.). *Cumberland*—Millville (Je.).
New Castle—Farnhurst.
 6. LYCOPODIUM CAROLINIANUM L. M. p. 26. Wet pine barrens. Summer.
New Jersey—Frequent.
 7. LYCOPODIUM COMPLANATUM L. *Ground Pine*. M. p. 26. Woods and thickets. Summer.

Family 2. **SELAGINELLACEAE** Underw.1. **SELAGINELLA** Beauv.

- Stem-leaves all alike, many-ranked. 1. *S. rupestris*.
 Stem-leaves of 2 kinds; 4-ranked, spreading in 2 planes. 2. *S. apus*.
1. **SELAGINELLA RUPESTRIS** (L.) Spring. M. p. 26. Dry rocks. Summer.
Philadelphia—Above Manayunk, *Mart.* (B. C.). *Bucks*—Nockamixon
 (Fr.). *Chester*—(P.). *Lancaster*—York Furnace (He.) (Ke.). *Berks*—
 (P.). *Northampton*—Easton (P.).
Hunterdon—Milford (C.).
New Castle—Rocky Ridge, Point Lookout.
2. **SELAGINELLA APUS** (L.) Spring. M. p. 27. Low shady places. Summer.

Family 3. **ISOETACEAE** Underw. **Quillwort Family.**1. **ISOETES** L. **QUILLWORT.**

- Submerged or rarely emerged in very dry seasons; leaves quadrangular,
 without peripheral bast-bundles.
 Stomata wanting; macrospores crested. 1. *I. lacustris*.
 Stomata present; macrospores echinate. 2. *I. echinospora* var.
 Amphibious or submerged only in earlier stages; stomata always present on
 the quadrangular leaves.
 Peripheral bast-bundles wanting. 3. *I. riparia*.
 Peripheral bast-bundles present.
 Macrospores sparsely covered with irregular crests. 4. *I. Dodgei*.
 Macrospores with honeycomb-like reticulations. 5. *I. Engelmanni*.
1. **ISOETES LACUSTRIS** L. M. p. 27. Ponds. Summer.
Delaware—Darby (B. Sm.).
- 2a. **ISOETES ECHINOSPORA BRAUNII** (Durieu) Engelm. M. p. 28. Ponds.
 Autumn.
Ocean—Toms River (C.).
- 2b. **ISOETES ECHINOSPORA ROBUSTA** Engelm. M. p. 28. Ponds. Autumn.
Bucks—Durham, *Ruth* (Fr.)
3. **ISOETES RIPARIA** Engelm. M. p. 28. Gravelly shores. Summer.
Philadelphia—Torresdale (Wn.). *Bucks*—Andalusia, *Mart.* (Fr.), Tul-
 lytown (Fr.). *Delaware*—Tinicum (Fu.), banks of the Delaware (B. Sm.).
Camden—Cooper's Point, *Mart.* (B. C.). *Gloucester*—Delaware, oppo-
 site Chester (Le.), Timber Creek (Te.).
New Castle—River shore, *B. Hoopes*, *Canby*, *Commons*.
4. **ISOETES DODGEI** A. A. Eaton. M. p. 29. Mud flats. Summer.
Bucks—Point Pleasant, *Dr. Geo. Best* (Fr.).
5. **ISOETES ENGELMANNI** A. Br. M. p. 29. Shallow ponds and ditches.
 Autumn.
Bucks—Near Perkasio (Fr.), Riegelsville, *E. A. Rau* (Fr.). *Lancaster*
 —Smithville (Ca.).
Camden—Camden (C.).
New Castle—Thompsons, Farahurst, Ogletown.

5a. *ISOETES ENGELMANNI VALIDA* Engelm. M. p. 29. Ponds and ditches. Autumn.

Lancaster—Smithville (P.).

5b. *ISOETES ENGELMANNI GRACILIS* Engelm. M. p. 29. Ponds and ditches. Autumn.

Bucks—Sellersville (Fr.). Delaware—Tinicum (P.).

Subkingdom SPERMATOPHYTES.

Class 1. GYMNOSPERMAE.

Order 1. PINALES.

Pistillate flowers several, with carpellary scales; fruit a cone, either dry or berry-like. Fam. 1. *Pinaceae*.

Pistillate flowers solitary, without carpellary scales; fruit drupaceous or baccate. Fam. 2. *Taxaceae*.

Family 1. PINACEAE Lindl. Pine Family. Conifers.

Scales of the cone numerous; leaf-buds scaly.

Cone-scales woody; leaves needle-shaped, 2-5 in a sheath.

1. *Pinus*.

Cone-scales thin; leaves linear-filiform, solitary or clustered without sheaths.

2. *Tsuga*.

Scales of the cone few (3-12); leaf-buds naked.

Cone globose, its scales peltate.

3. *Chamaecyparis*.

Fruit fleshy, berry-like, a modified cone.

4. *Juniperus*.

1. PINUS L.

Leaves 5 in a sheath; cone-scales little thickened at the tip.

1. *P. Strobus*.

Leaves 2-3 in a sheath; cone-scales much thickened at the tip.

Leaves some or all of them in 2's.

Cones conic, 3-7 cm. long, their scales tipped with prickles.

Leaves stout, 3-6 cm. long.

2. *P. Virginiana*.

Leaves slender, 7-13 cm. long.

3. *P. echinata*.

Cones 8-12 cm. long, their scales tipped with very stout, short spines.

4. *P. pungens*.

Leaves in 3's (very rarely in 2's or 4's).

Leaves 1.5-2.5 dm. long; old sheaths 1-2.5 cm. long; cones oblong-conic.

5. *P. Taeda*.

Leaves 7-13 cm. long; old sheaths 0.6-1.2 cm. long; cones ovoid, base flat.

6. *P. rigida*.

1. *PINUS STROBUS* L. *White Pine*. M. p. 31. In woods, frequently in cultivation. Early summer.

Bucks—Roek Hill (Fr.), Buckingham (Ws.). Montgomery—Shannonville (Cr.), Edge Hill (Re.), Schuylkill at Lafayette (Ws.). Delaware—Haverford (Le.), Concord (W. Tr.). Chester—(P.). Lancaster—(P.). Lehigh—Lehigh Mountain (Kr.).

Camden—Berlin (C.). Gloucester—Woodbury (C.), Swedesboro (Li.). Monmouth—Pinebrook (C.). Middlesex—Woodbridge (C.).

New Castle—Faulkland, *Commons*.

2. *PINUS VIRGINIANA* Mill. *New Jersey or Scrub Pine*. M. p. 32. Sandy soil. Spring.

Philadelphia—Byberry, *Mart.* (B. C.), *Wissahickon* (Re.). *Bucks*—Banks of the Delaware (Fr.) (Ws.), *Narrowsville* (Mac.). *Montgomery*—*Shannonville* (Cr.). *Lancaster*—(P.). *Northampton*—(P.).

New Jersey—Common outside the pine barrens.

New Castle—Peach's, Ogletown, etc. Frequent.

3. *PINUS ECHINATA* Mill. *Yellow Pine*. M. p. 32. Usually in dry or sandy soil. Spring.

Montgomery—*Shannonville* (Cr.). *Delaware*—*Radnor* (Fu.), *Chester* (W. Tr.). *Lancaster*—*Manheim* (Ca.).

Burlington—*Medford* (Br.), *Quaker Bridge* (He.), *Brown Mills* (Te.). *Camden*—*Ancora* (Gi.), *Winslow* (Re.). *Gloucester*—*Mickleton*, *Swedesboro* (Li.). *Cumberland*—*Fairton*, *Bridgeton* (C.). *Atlantic*—*May's Landing* (Ha.), *Hammonton* (C.). *Ocean*—*New Egypt* (C.), *Davenport* (Mac.). *Middlesex*—*South Amboy* (C.).

4. *PINUS PUNGENS* Michx. f. *Table Mountain Pine*. M. p. 32. Woods. Spring.

Lancaster—*York Furnace* (Cr.), *McCall's Ferry* (Le.). *Berks*—*Ham-burg* (Cr.). *Dauphin*—*Harrisburg* (Me.).

Hunterdon—*Sergeantsville* (C.).

5. *PINUS TAEDA* L. *Loblolly or Old-Field Pine*. M. p. 32. Wet clay or dry sandy soil. Spring.

Cape May—Near *Cape May*.

New Castle—*Blackbird Head*, *Commons*.

6. *PINUS RIGIDA* Mill. *Pitch Pine*. M. p. 33. Sandy or barren soil. Spring.

Philadelphia—*Wissahickon* (Re.). *Bucks*—*Sellersville*, *Rock Hill* (Fr.). *Delaware*—*Swarthmore* (Ws.) *Chester*—(P.). *Lancaster*—(P.). *Lehigh*—*Lehigh Mountain* (Kr.). *Northampton*—(P.).

New Jersey—Common, mainly restricted to the pine barrens.

New Castle—*Fernhook*, *Canby*; *Centerville*, *Commons*.

2. *TSUGA* Carr.

1. *TSUGA CANADENSIS* (L.) Carr. *Hemlock*. M. p. 34. Mostly hilly or rocky woods. Spring.

Philadelphia—*Wissahickon*. *Bucks*—*Sellersville* (Fr.), *Narrowsville* (Mac.), *Neshaminy* (Ws.). *Montgomery*—Above *Manayunk* (Sa.). *Delaware*—*Lansdowne* (Pe.), *Swarthmore* (Pr.) (Sa.) (Ws.), *Valley of Darby Creek* (B. Sm.), *Valley of Crum Creek* (VP.), *Concord* (W. Tr.). *Chester*—Near *Laurel*, *Octoraro* (St.). *Lancaster*—(P.). *Lehigh*—*Rockdale* (Kr.). *Northampton*—*Easton*, *Porter* (B. C.). *Dauphin*—*Steelton* (Wn.).

Burlington—*Burlington*, *Vincentown* (C.). *Gloucester*—Near *Swedesboro* (Li.). *Ocean*—*New Egypt* (C.).

New Castle—*Odessa*, *Greenbank*, *Commons*; near *Allapokas*.

3. CHAMAECYPARIS Spach.

1. CHAMAECYPARIS THYOIDES (L.) B. S. P. *White Cedar*. M. p. 36. Cedar swamps. Spring.
Bucks—Bristol (P.).
New Jersey—Common in the pine barrens.
New Castle—Collins Beach.

4. JUNIPERUS L.

Leaves all subulate, prickly-pointed, verticillate; aments axillary.

1. *J. communis*.

Leaves of two kinds; scale-like and subulate, mostly opposite; aments terminal.

2. *J. Virginiana*.

1. JUNIPERUS COMMUNIS L. *Common Juniper*. M. p. 36. Dry sterile hills. Spring.

2. JUNIPERUS VIRGINIANA L. *Red Cedar*. *Savin*. M. p. 37. Dry hills. Spring.

TAXODIUM DISTICHUM (L.) L. C. Rich. *Bald Cypress*. In cultivation. Spring.

SEQUOIA GIGANTEA Decaisne.

Delaware—Roadside near Painter's Arboretum.

Family 2. TAXACEAE Lindl.

1. TAXUS L.

1. TAXUS CANADENSIS Marsh. *American Yew, Ground Hemlock*. M. p. 37. Moist banks and hills, especially under evergreens. Spring.
Bucks—Nockamixon (Fr.), Neshaminy, Doylestown (VP.), Upper Black's Eddy, Bedminster (Fr.). *Montgomery*—Arcola (Cr.). *Chester*—Black Rock (P.), Phoenixville (Sa.). *Lehigh*—Lehigh Mountain (Kr.). *Northampton*—Hokendauqua (Kr.), Bethlehem (Me.).

Class 2. ANGIOSPERMAE.

Subclass 1. MONOCOTYLEDONES.

Order 1. PANDANALES.

Flowers in elongated spikes.

Fam. 1. *Typhaceae*.

Flowers globose.

Fam. 2. *Sparganiaceae*.

Family 1. TYPHACEAE J. St. Hil. *Cat-tail Family*.

1. TYPHA L. CAT-TAIL.

Spikes dark brown or black, the pistillate and staminate usually contiguous, the former without bractlets; stigmas spatulate or rhomboid; pollen 4-grained.

1. *T. latifolia*.

Spikes light brown, the pistillate and staminate usually distant, the former with bractlets; stigmas linear; pollen in simple grains.

2. *T. angustifolia*.

1. TYPHA LATIFOLIA L. M. p. 39. In marshes. Summer.

2. *TYPHA ANGUSTIFOLIA* L. M. p. 39. In marshes. Summer.

Family 2. **SPARGANIACEAE** Agardh. **Bur-reed Family.**

1. **SPARGANIUM** L. **BUR-REED.**

Fruit sessile.
Fruit stalked.

1. *S. eurycarpum*.
2. *S. androcladum*.

1. *SPARGANIUM EURYCARPUM* Engelm. M. p. 39. Marshes and along streams. Summer.
2. *SPARGANIUM ANDROCLADUM* (Engelm.) Morong. M. p. 39. Bogs or shallow water. Summer.

Order 2. **NAIADALES.**

Perianth, if present, inferior; carpels mostly distinct.

Perianth-segments, when present, herbaceous.

Carpels distinct; aquatic herbs.

Fam. 1. *Naiadaceae*.

Carpels united until maturity; bog plants; flowers racemed or spiked.

Fam. 2. *Scheuchzeriaceae*.

Perianth of two series of segments, the outer green; the inner mostly white.

Fam. 3. *Alismaceae*.

Perianth superior; carpels united.

Fam. 4. *Vallisneriaceae*.

Family 1. **NAIADACEAE** Lindl.

Flowers perfect.

Perianth of 4 distinct segments.

1. *Potamogeton*.

Perianth none; flowers naked.

2. *Ruppia*.

Flowers monœcious or diœcious.

Leaves entire.

Leaves 1-nerved, 2-8 cm. long, 0.5 mm. or less wide.

3. *Zannichellia*.

Leaves many-nerved, 0.3-1.6 m. long, 2-8 mm. wide.

5. *Zostera*.

Leaves spiny-toothed on the margins.

4. *Naia*.

1. **POTAMOGETON** L. **PONDWEED.**

Stipules axillary and free from the leaf.

With floating and submerged leaves.

Submerged leaves bladeless.

Drupelets barely keeled; nutlets more or less pitted.

1. *P. natans*.

Drupelets 3-keeled; nutlets not pitted.

2. *P. Oakesianus*.

Submerged leaves with a proper blade.

Submerged leaves of 2 kinds, lanceolate and oval or oblong.

Uppermost leaves broadly oval or elliptic, lowest lanceolate.

3. *P. amplifolius*.

Uppermost leaves lanceolate and pellucid, lowest oblong and opaque.

4. *P. pulcher*.

Submerged leaves all alike.

Blades of the submerged leaves linear or nearly so throughout.

Blades the same breadth throughout, obtusely pointed, coarsely cellular-reticulated in the middle.

5. *P. Nuttallii*.

Blades dilated at base, acute, without cellular reticulation.

7. *P. heterophyllus*.

Blades of the submerged leaves lanceolate.

6. *P. lonchites*.

With submerged leaves only.

Without propagating buds and without glands.

Leaves with broad blades, mostly lanceolate or ovate, many-nerved. 8. *P. perfoliatus*.

Leaves with narrow blades, linear or oblong-linear, several-nerved. 12. *P. foliosus*.

Leaves with narrow blades, capillary or setaceous, 1-nerved or nerveless. 9. *P. confervoides*.

With propagating buds or glands, or both.

With buds, but without glands.

Leaves serrulate, 3-7-nerved. 10. *P. crispus*.

Leaves entire, with 3 principal and many fine nerves. 11. *P. zosteraefolius*.

With both buds and glands.

Glands large and translucent, buds rare.

13. *P. obtusifolius*.

Glands small, often dull; buds common.

14. *P. pusillus*.

Stipules adnate to the leaves or petioles.

With both floating and submerged leaves.

Submerged peduncles as long as the spikes, clavate, often recurved.

15. *P. diversifolius*.

Submerged spikes sessile or nearly so.

16. *P. Spirillus*.

With submerged leaves only.

Drupelets without keels or obscurely keeled.

17. *P. pectinatus*.

Drupelets strongly 3-keeled.

18. *P. Robbinsii*.

1. POTAMOGETON NATANS L. M. p. 42. Ponds and streams. Summer.
2. POTAMOGETON OAKESIANUS Robbins. M. p. 42. Still water. Summer.
Burlington—Brown Mills (C.). Atlantic—Estelville (C.), Mill Pond
10 miles west of Atlantic City (He.). Ocean—Forked River (Le.).
3. POTAMOGETON AMPLIFOLIUS Tuckerm. M. p. 43. Ponds and rivers.
Summer.
Philadelphia—Schuylkill above Philadelphia (Cr.). Bucks—Hoot's
Dam (Fr.). Delaware—Rifle Range (Cr.). Lehigh—Lehigh River (Kr.).
Northampton—(P.).
Camden—In the Delaware (C.). Gloucester—Big Timber Creek (He.).
4. POTAMOGETON PULCHER Tuckerm. M. p. 43. Ponds. Summer.
Bucks—Bristol (Cr.). Lehigh—(P.). Northampton—(P.).
Gloucester—Repaupo (Li.) (Wn.). Salem—Elmer (C.). Cape May—
Wildwood (C.). Atlantic—Atlantic City (C.). Ocean—Toms River (C.).
New Castle—Col. Andrews, Tatnall; Newport, Commons; Shelpot
Creek, Cedar Swamp, Commons.
5. POTAMOGETON NUTTALLII Cham. & Sch. M. p. 43. Ponds and streams.
Summer.
6. POTAMOGETON LONCHITES Tuckerm. M. p. 43. Ponds and slow streams.
Late summer.
Philadelphia—Angora, C. A. Boice (Te.). Delaware—Tinicum (B.
Sm.). Lancaster—Opposite Marietta (Le.), Safe Harbor (P.). North-
ampton—Easton (P.).
Gloucester—Mickleton (He.), Swedesboro (Li.).
New Castle—Cherry Island, Commons.
7. POTAMOGETON HETEROPHYLLUS Schreb. M. p. 44. Still or flowing water.
Summer.

8. POTAMOGETON PERFOLIATUS L. M. p. 45. Ponds and streams. Summer.
9. POTAMOGETON CONFEROIDES Reichb. M. p. 45. Cold ponds. Summer.
Burlington—Atsion, Pleasant Mills (C.), Brown Mills, Tuckerton (Te.).
Camden—Ateo (C.). *Gloucester*—Malaga (C.). *Atlantic*—Mill pond 10
miles west of Atlantic City (He.). *Ocean*—Forked River (Cr.) (He.).
10. POTAMOGETON CRISPUS L. M. p. 46. Flowing or stagnant, fresh or
brackish water. Summer.
Lancaster—Conestoga Creek (P.). *Northampton*—Lehigh River and
Bushkill Creek (P.).
Camden—In the Delaware (C.). *Hunterdon*—In the Delaware (C.).
11. POTAMOGETON ZOSTERAEFOLIUS Schum. M. p. 46. Still or running
water. Summer.
Lancaster—Susquehanna River (P.).
12. POTAMOGETON FOLIOSUS Raf. M. p. 46. Ponds and streams. Summer.
Bucks—Sellersville (Fr.). *Lancaster*—Susquehanna, A. P. Garber (B.
C.), Paradise (St.).
Salem—Salem, Woodstown (Li.).
New Castle—Common.
13. POTAMOGETON OBTUSIFOLIUS Mert. & Koch. M. p. 46. Still water.
Summer.
Lancaster—(P.). *Northampton*—Easton (P.).
14. POTAMOGETON PUSILLUS L. M. p. 47. Ponds and slow streams. Sum-
mer.
15. POTAMOGETON DIVERSIFOLIUS Raf. M. p. 48. Shallow or stagnant
water. Summer.
16. POTAMOGETON SPIRILLUS Tuckerm. M. p. 48. Ponds and ditches.
Summer.
Bucks—Rock Hill (Fr.). *Delaware*—Haverford (Fu.) (B. Sm.). *Lan-*
caster—Susquehanna (Cr.).
Camden—Delaware River (C.). *Gloucester*—Westville (Li.).
17. POTAMOGETON PECTINATUS L. M. p. 49. Fresh, brackish, or salt water.
Summer.
Lancaster—Susquehanna (Cr.) (Le.) (Pr.), Peach Bottom (Pr.).
Lehigh—Salsburg (Kr.). *Northampton*—Black Horse Tavern (P.).
Dauphin—Steeltown (Wn.).
Ocean—Island Heights (Mac.). *Hunterdon*—In the Delaware (C.).
18. POTAMOGETON ROBBINSII Oakes. M. p. 49. Ponds and slow streams.
Summer.
Lancaster—Susquehanna River (P.). *Northampton*—Lehigh River (P.).
Atlantic—Pleasant Mills, E. Diffenbaugh (B. C.).
New Castle—Canal, Delaware City, Commons.

2. RUPPIA L. DITCH-GRASS.

1. RUPPIA MARITIMA L. M. p. 50. Shallow bays along coast. Summer.

3. ZANNICHELLIA L. HORNED PONDWEED.

1. ZANNICHELLIA PALUSTRIS L. M. p. 50. Fresh or brackish ponds. Summer.

Bucks—Andalusia, *Mart.* (Fr.). *Delaware*—Tinicum, T. C. Palmer (Fu.).
Ocean—Forked River (Cr.) (Ja.).

New Castle—Port Penn, Brandywine Creek, East Channel.

4. NAIAS L. NAIAD.

1. NAIAS FLEXILIS (Willd.) Rost. & Schmidt. M. p. 51. Ponds and slow streams. Summer.

Bucks—Sellersville (Fr.). *Delaware*—Valley of Darby Creek (B. Sm.).
Chester—(P.). *Lancaster*—Susquehanna opposite Marietta (Le.). *Northampton*—Saylor Lake, Wind Gap (He.).

Camden—Delaware River, Camden, *Mart.* (B. C.). *Gloucester*—Repaupo Meadows (He.), Big Timber Creek (Li.).

New Castle—Common.

5. ZOSTERA L.

1. ZOSTERA MARINA L. *Grass-wrack*, *Eel-grass*. M. p. 51. Shoal water of bays along coast. Summer.

Family 2. SCHEUCHZERIAACEAE Agardh.

Leaves all basal; flowers numerous, in a spike-like raceme. 1. *Triglochin*.
Stem leafy; flowers few in a loose raceme. 2. *Scheuchzeria*.

1. TRIGLOCHIN L. ARROW-GRASS.

1. TRIGLOCHIN MARITIMA L. M. p. 52. Salt marshes. Summer.
Ocean—Point Pleasant (Br.) (Ja.).

2. SCHEUCHZERIA L.

1. SCHEUCHZERIA PALUSTRIS L. M. p. 53. Bogs. Summer.
Bucks—Rock Hill (Cr.).
Camden—Longacoming (C.). *Gloucester*—Repaupo.

Family 3. ALISMAOEA DC. Water Plantain Family.

Carpels in a ring upon a small, flat receptacle. 1. *Alisma*.
Carpels crowded in many series upon a large convex receptacle.
Flowers perfect, staminate or polygamous. 2. *Lophotocarpus*.
Flowers monœcious or diœcious. 3. *Sagittaria*.

1. ALISMA L.

1. ALISMA PLANTAGO-AQUATICA L. *Water Plantain*. M. p. 54. Shallow water and ditches. Summer.

2. LOPHOTOCARPUS T. Durand.

1. LOPHOTOCARPUS CALYCINUS (Engelm.) J. G. Smith. M. p. 55. Swamps. Summer.
New Castle—Shelpot Creek, Delaware City, Augustine Pier.

3. SAGITTARIA L. ARROW-HEAD.

Fertile pedicels slender, ascending, not reflexed in fruit.

Leaf-blades sagittate; filaments glabrous.

Beak of the achene erect.

Fruiting pedicels shorter than the bracts; leaves broad.

1. *S. longirostra*.

Fruiting pedicels longer than the bracts; leaves narrow.

2. *S. Engelmanniana*.

3. *S. latifolia*.

Beak of the achene horizontal or oblique.

Leaf-blades entire, or rarely hastate or cordate.

Fruiting heads sessile or very nearly so.

4. *S. rigida*.

Both staminate and pistillate flowers pedicelled.

5. *S. graminea*.

Fertile pedicels stout, reflexed in fruit; filaments dilated.

6. *S. subulata*.

1. SAGITTARIA LONGIROSTRA (Micheli) J. G. Smith. M. p. 57. In swamps and along ponds. Summer.

Delaware—(P.). Lancaster—(P.).

2. SAGITTARIA ENGELMANNIANA J. G. Smith. M. p. 57. Shallow water. Summer.

Philadelphia—46th and Spruce streets (Mac.). Bucks—(P.). Northampton—(P.).

Burlington—Quaker Bridge, Brown Mills (C.), east of Medford (St.). Gloucester—Westville (Li.). Atlantic—Pleasant Mills (C.). Ocean—Toms River (Fu.). Monmouth—Sandy Hook (C.).

3. SAGITTARIA LATIFOLIA Willd. M. p. 57. In water and wet places. Summer.

- 3a. SAGITTARIA LATIFOLIA PUBESCENS Muhl. M. p. 57. Shallow water. Summer.

Bucks—Sellersville (Fr.). Chester—Mortonville (St.). Northampton—Seidersville (P.).

4. SAGITTARIA RIGIDA Pursh. M. p. 58. Swamps or shallow water. Summer.

Philadelphia—Bartram's Garden (Mac.). Bucks—Sellersville (Fr.). Delaware—Tinicum (Fr.). Lancaster—(P.). Northampton—(P.). Dauphin—Harrisburg (P.).

Camden—Camden, Mart. (B. C.), Gloucester (Te.). Gloucester—Westville (He.) (Li.) (Wn.). Hunterdon—Bull Island (C.).

New Castle—Scarce.

5. SAGITTARIA GRAMINEA Michx. M. p. 59. Mud or shallow water. Summer.

Bucks—Bristol (Mac.) (Te.). Delaware—Marcus Hook (Fu.). Berks—(P.). Northampton—(P.).

Camden—Camden, Mart. (B. C.). Cape May—Cape May (Te.).

New Castle—Delaware City.

6. SAGITTARIA SUBULATA (L.) Buchenau. M. p. 59. Tidewater mud. Summer.

Philadelphia—Torresdale (Br.). Delaware—Tinicum, Dr. Geo. Smith (P.).

Camden—Shores of the Delaware (C.), Fish House (Br.), Washington Park (VP.). Mercer—Trenton (C.).

Family 6. **VALLISNERIAOCEAE** Dumort. **Tape-grass Family.**

Stem branched; leaves whorled or opposite. 1. *Philotria*.
 Acaulescent; stoloniferous; leaves grass-like, elongated. 2. *Vallisneria*.
 Stem stoloniferous; leaves broad, rounded, cordate, petioled. 3. *Limnobiium*.

1. **PHILOTRIA** Raf. **WATER-WEED.**

Leaf-blades oblong, elliptic or ovate-oblong. 1. *P. Canadensis*.
 Leaf-blades narrowly linear. 2. *P. angustifolia*.

1. **PHILOTRIA CANADENSIS** (Michx.) Britton. M. p. 60. Slow streams and ponds. Summer.

2. **PHILOTRIA ANGUSTIFOLIA** Muhl. In shallow water. Summer.
Bucks—Point Pleasant, Britton (P.).

2. **VALLISNERIA** L.

1. **VALLISNERIA SPIRALIS** L. *Tape-grass. Eel-grass.* M. p. 60. In slow waters. Late summer.

3. **LIMNOBIUM** L. C. Richard.

1. **LIMNOBIUM SPONGIA** (Bosc.) L. C. Richard. *Frog's-bit.* M. p. 61. Stagnant water. Summer.

Monmouth—Swimming River (C.).
New Castle—Delaware City, Commons.

Order 3. **GRAMINALES.**

Leaves 2-ranked, sheaths without united margins. Fruit a caryopsis; culm mostly hollow. Fam. 1. *Gramineae*.
 Leaves 3-ranked, sheaths with united margins. Fruit an achene; culm solid. Fam. 2. *Cyperaceae*.

Family 1. **GRAMINEAE** Juss. **Grass Family.**

A. Spikelets 1 or 2-flowered; when 2-flowered the upper fertile, lower staminate; rachilla articulated below the scales or the subtending involucre, and not extending beyond the flowers.
 Spikelets not flattened laterally.

Flowering scale and palet hyaline; none of the scales spiny.

Spikelets monœcious; staminate and pistillate in the same panicle. I. *Maydeae*.

Spikelets in pairs, perfect, or the pedicellate one staminate, empty, rudimentary, or wanting. II. *Andropogoneae*.

Flowering scale and palet of the perfect flower coriaceous or chartaceous; spikelets involucrate in Nos. 12 and 13; scales 3 or 4. III. *Panicæe*.

Spikelets flattened laterally, 1-flowered; scales 2. IV. *Oryzæe*.

B. Spikelets 1-many-flowered; rachilla generally articulated above the two lower scales (below them in Nos. 28, 35, and 43) and frequently extending beyond the flower in 1-flowered spikelets.

Culms herbaceous.

Spikelets upon pedicels in panicles, spike-like panicles or racemes, not in rows.

Spikelets with but one perfect flower, which is terminal except in Nos. 31 and 32.

Fifth scale enclosing a perfect flower; palet 1-nerved.

V. *Phalarideae*.

Third scale enclosing a perfect flower; palet 2-nerved.

VI. *Agrostideae*.

Spikelets with 2 or more perfect flowers (or one staminate in Nos. 35 and 40).

Flowering scales generally shorter than the empty lower ones, usually with a bent awn on the back.

VII. *Aveneae*.

Flowering scales generally longer than the empty lower ones, unawned or with a straight awn from the apex.

IX. *Festuceae*.

Spikelets in two rows, forming a one-sided spike or raceme.

VIII. *Chlorideae*.

Spikelets in two opposite rows, forming an equilateral spike.

X. *Hordeae*.

(Culms woody, at least at the base; tall reeds.

XI. *Bambuseae*.

Tribe I. MAYDEAE.

1. *Tripsacum*.

Tribe II. ANDROPOGONEAE.

Spikelets alike, perfect.

2. *Erianthus*.

Spikelets not alike, the sessile perfect; the pedicelled staminate empty or wanting.

Inflorescence of spike-like silky racemes.

3. *Andropogon*.

Inflorescence paniculate.

Pedicelled spikelet present and usually staminate.

4. *Sorghum*.

Pedicelled spikelet wanting.

5. *Sorghastrum*.

Tribe III. PANICEAE.

Spikelets without subtending involucre of bristles or valves.

Spikelets all alike.

Spikelets arranged in one-sided racemes.

Racemes alternate or scattered, rarely in a terminal pair, or sometimes single and slender; in the latter case the spikelets broadly oval and obtuse.

Spikelets of 3 scales.

6. *Paspalum*.

Spikelets of 4 scales.

Spikelets awnless, the scales glabrous.

9. *Brachiaria*.

Spikelets with the second and third scales hispid on the nerves and usually long-awned.

10. *Echinochloa*.

Racemes long and slender, digitate or whorled, sometimes single or in pairs; spikelets lanceolate and acute.

8. *Syntherisma*.

Spikelets arranged in a true panicle, either open or contracted.

11. *Panicum*.

Spikelets of two kinds, one borne on terminal panicles, the other solitary on subterranean peduncles and maturing seed.

7. *Amphicarpon*.

Spikelets subtended by an involucre consisting of:

1-many persistent bristles; spikelets in dense spikes or spike-like panicles, deciduous.

12. *Chaetochloa*.

Two spine-bearing valves forming a bur enclosing the spikelets and deciduous with them.

13. *Cenchrus*.

Tribe IV. ORYZEAE.

Spikelets monœcious.

14. *Zizania*.

Spikelets not monœcious.

15. *Homalocenchrus*.

Tribe V. PHALARIDEAE.

Third and fourth scales

not awned; stamens 3.

16. *Phalaris*.

awned upon the back; stamens 2.

17. *Anthoxanthum*.

subtending staminate flowers with 3 stamens; fertile flowers with 2 stamens.

18. *Savastana*.

Tribe VI. AGROSTIDEAE.

Flowering scale indurated at maturity, of firmer texture than the empty, and closely enveloping the grain.

Rachilla not prolonged beyond the palet.

Flowering scale with a three-branched awn; stamens mostly 3.

19. *Aristida*.

Flowering scale with a simple awn.

Flowering scale narrow; awn persistent.

Awn tortuous or twisted, stout; callus evident.

20. *Stipa*.

Awn straight, very slender; callus minute.

22. *Muhlenbergia*.

Flowering scale broad; awn slender, straight, deciduous; callus obtuse.

21. *Oryzopsis*.

Rachilla with a pedicel-like extension beyond the palet; stamens 2.

23. *Brachyelytrum*.

Flowering scales hyaline or membranous at maturity; empty scales coarser; grain loose.

Spikelets in a dense spike-like panicle. (Some species of 27 may be looked for here.)

Spikelets 6 mm. or less long.

Spikelets readily deciduous at maturity.

Empty scales not awned.

26. *Alopecurus*.

Empty scales awned.

28. *Polypogon*.

Spikelets not deciduous; empty scales persistent.

Flowering scales slightly exceeding the empty ones.

24. *Heleochoa*.

Flowering scales much shorter than the empty ones.

25. *Phleum*.

Spikelets 10-12 mm. long; tall seashore grasses.

32. *Ammophila*.

Spikelets variously panicked; panicle not spike-like, except in a few species of No. 27.

Seed loosely enclosed in a pericarp, which opens readily at maturity.

27. *Sporobolus*.

Seed adherent to the pericarp.

Palet one-nerved; stamen 1; flower plainly stalked; scales not hairy.

29. *Cinna*.

Palet 2-nerved; stamens 3; flower not plainly stalked.

Flowering scale bifid, with a delicate awn on its back; rachilla prolonged into a short bristle.

34. *Apera*.

Flowering scale entire; rachilla not prolonged into a bristle.

Callus with a tuft of long hairs at the base (except in some species of No. 31).

Rachilla extended beyond the palet.

31. *Calamagrostis*.

Rachilla not extended beyond the palet.

33. *Calamovilfa*.

Callus naked or with very short hairs.

30. *Agrostis*.

Tribe VII. AVENEAE.

- Spikelets deciduous; lower flower perfect, upper staminate, awned; plant velvety. 35. *Holcus*.
- Spikelets not deciduous; empty scales persistent, flowering ones deciduous. Spikelets of 2 perfect flowers; rachilla not prolonged beyond the upper one. 36. *Aira*.
- Spikelets 2-many-flowered; rachilla prolonged beyond the upper flower. Awn of flowering scale upon the back, inserted below the teeth. Flowers all perfect, or the upper ones staminate or wanting. Spikelets less than 12 mm. long; grain free, unfurrowed. Flowering scale finely erose-dentate or 2-lobed. 37. *Deschampsia*.
- Flowering scale cleft or 2-toothed, with the teeth sometimes produced into awns. 38. *Trisetum*.
- Spikelets over 12 mm. long; grain furrowed, usually adherent to the scales. 39. *Avena*.
- Upper flower perfect, lower staminate, its scales strongly awned. 40. *Arrhenatherum*.
- Awn from between the lobes or teeth of the flowering scale, generally twisted. 41. *Danthonia*.

Tribe VIII. CHLORIDEAE.

- One perfect flower in each spikelet. No empty scales above the flower. Spikelets deciduous. 43. *Spartina*.
- Spikelets not deciduous; empty scales persistent; low, slender grasses. 42. *Capriola*.
- One to several empty scales above the flower. Spikelets scattered or remote on filiform spikes. 44. *Gymnopogon*.
- Spikelets crowded, sometimes 2-flowered. 45. *Atheropogon*.
- Two to three perfect flowers in each spikelet. Spikes with terminal spikelets. 46. *Eleusine*.
- Spikes without terminal spikelets, the rachis extending beyond them into a point. 47. *Dactyloctenium*.

Tribe IX. FESTUCEAE.

- Rachilla with long hairs enveloping the flowering scale; tall aquatic grass. 48. *Phragmites*.
- Rachilla and flowering scales naked or hairy, hairs much shorter than the scales. Flowering scale 1-3-nerved, or rarely with faint additional intermediate nerves. Lateral nerves of flowering scale pilose. Internodes of the rachilla long, the deeply 2-lobed flowering scale attached by a long-pointed callus. 50. *Triplasis*.
- Internodes of the rachilla and the callus of the flowering scale short, blunt. Panicle simple or compound, contracted or open, the spikelets on pedicels of varying length. 49. *Tricuspis*.
- Panicle composed of long branches, along which the appressed spikelets are arranged on short pedicels. 51. *Diplachne*.
- Lateral nerves of the flowering scale glabrous. Second empty scale similar to the first. 52. *Eragrostis*.
- Second empty scale very dissimilar to the first, broad and rounded at the summit. 53. *Eatonia*.
- Flowering scales 5-many-nerved. Spikelets with 2 or more of the upper scales empty, broad and enfolding each other. 54. *Melica*.

Spikelets with the upper scales flower-bearing, or narrow and abortive.

Stigmas placed at or near the apex of the ovary.

Scales more or less strongly compressed and keeled.

Empty basal scales 3-6; spikelets flat, 2-edged.

55. *Uniola*.

Empty basal scales 2; spikelets flattened.

Panicle contracted; spikelets dioecious.

56. *Distichlis*.

Panicle open; spikelets perfect.

Flowering scales herbaceous, awn-pointed; spikelets collected into one-sided clusters.

57. *Dactylis*.

Flowering scales scarious-margined; rachis glabrous or with webby hairs.

58. *Poa*.

Scales rounded on the back, at least below.

Obtuse or subacute and scarious at the apex, usually toothed.

Plainly 5-7-nerved; styles present.

59. *Panicularia*.

Obscurely 5-nerved; no style.

60. *Puccinellia*.

Acute, pointed or awned at the apex.

61. *Festuca*.

Stigmas plainly arising below the apex of the ovary; scales mostly awned.

62. *Bromus*.

Tribe X. HORDEAE.

Spikelets solitary at the notches of the rachis.

Flowering scales with their backs turned to the rachis.

63. *Lolium*.

Flowering scales with their sides turned to the rachis.

64. *Agropyron*.

Spikelets 2-6 at each joint of the rachis; scales mostly long-awned.

Spikelets 1-flowered or with the rudiment of a second flower.

65. *Hordeum*.

Spikelets 2-many-flowered.

Empty scales a little smaller than the flowering ones.

66. *Elymus*.

Empty scales very small or none.

67. *Hystrix*.

Tribe XI. BAMBUSEAE.

Tall canes with large, flat spikelets in panicles or racemes.

68. *Arundinaria*.

1. TRIPSACUM L.

1. TRIPSACUM DACTYLOIDES L. *Gama-grass, Sesame-grass*. M. p. 67. Moist soil. Summer.

Philadelphia—Bartram's Garden (B. Sm.). *Delaware*—Painter's Arboretum (Fu.). *Chester*—(P.). *Lancaster*—Islands, York Furnace (Cr.) (Le.), Fites Eddy (St.). *Berks*—Near Reading (P.).

Cape May—Cape May, I. Burk (He.). *Atlantic*—Near Egg Harbor (C.). *Monmouth*—Monmouth Beach Center (C.).

New Castle—Above Allapokas.

2. ERIANTHUS Michx. PLUME-GRASS.

Awn spiral.

1. *E. alopecuroides*.

Awn straight.

2. *E. compactus*.

1. ERIANTHUS ALOPECUROIDES (L.) Ell. M. p. 67. Damp soil. Autumn.
Burlington—Below Burlington (C.). *Gloucester*—Mickleton, Swedesboro (C.). *Atlantic*—Hammononton (C.).
2. ERIANTHUS COMPACTUS Nash. M. p. 68. Moist soil. Summer.
Bucks—Andalusia, *Mart.* (Fr.).

3. ANDROPOGON L. BEARD-GRASS.

Racemes singly disposed; apex of the rachilla internodes with a translucent, cup-shaped, entire or irregularly-toothed appendage.

Spikelets 5-7 mm. long; sheaths of the innovations green.

1. *A. scoparius*.

Spikelets 8-10 mm. long; sheaths of the innovations strongly compressed, glaucous.

2. *A. littoralis*.

Racemes disposed in pairs or more; apex of the rachis internodes unappended.

Pedicellate spikelet sterile, of 1 or 2 scales, much smaller than the sessile one.

Racemes usually protruding from the lateral fissure of the spathe, sometimes more or less exerted from the apex, the peduncle never long exerted.

Branches of the inflorescence crowded at the summit of the culm in a dense corymbiform panicle.

3. *A. corymbosus*.

Branches of the inflorescence scattered along the culm in a long, linear panicle.

4. *A. Virginicus*.

Racemes much exerted on long peduncles.

5. *A. argyraeus*.

Pedicellate spikelet as large as, or larger than the sessile, of 4 scales and a staminate or rarely perfect flower.

6. *A. furcatus*.

1. ANDROPOGON SCOPARIUS Michx. M. p. 69. Dry ground. Late summer.
2. ANDROPOGON LITTORALIS Nash. M. p. 69. In sand along the seashore. Summer.
Cape May—Stone Harbor (St.).

3. ANDROPOGON CORYMBOSUS (Chapm.) Nash. M. p. 69. Wet soil. Autumn.
Bucks—Bristol (Fr.). *Montgomery*—(P.). *Delaware*—Valley of Darby Creek (B. Sm.), Concord (W. Tr.). *Chester*—(P.). *Lancaster*—(P.).

New Jersey—Common.

New Castle—Frequent.

4. ANDROPOGON VIRGINICUS L. M. p. 70. Dry or moist fields. Late summer.
5. ANDROPOGON ARGYRAEUS Schultes. M. p. 70. Dry sandy soil. Autumn.
New Castle—Railroad below Townsend.
6. ANDROPOGON FURCATUS Muhl. M. p. 70. Dry or moist soil. Late summer.

4. SORGHUM Pers.

1. SORGHUM HALEFENSE (L.) Pers. *Johnson-grass*. M. p. 71. Fields and waste places. Summer.
Philadelphia—(P.). *Bucks*—(P.).

5. SORGHASTRUM Nash.

1. *SORGHASTRUM AVENACEUM* (Michx.) Nash. *Indian Grass*. M. p. 71.
Dry fields. Late summer.

6. PASPALUM L.

Rachis of the racemes very broad, twice the width of the spikelets, or nearly so, which are partially concealed by its inrolled margins.

1. *P. membranaceum*.

Rachis of the racemes narrower than the spikelets, not inrolled on the margins.

Racemes 2, approximately in a pair at the summit of the culm; rootstocks extensively creeping; culms not tufted. 2. *P. distichum*.

Racemes 1 to several, alternate, culms tufted.

Culms simple, no branches from the upper sheaths; racemes stout.

Spikelets 3 mm. long or less.

3. *P. laeve*.

Spikelets 4 mm. long or more.

4. *P. glabratum*.

Culms branched, the upper sheath containing from 1-3 branches; racemes slender.

Culm densely pilose below the racemes; lower sheaths usually glabrous or nearly so.

5. *P. pubescens*.

Culm glabrous; lower sheaths generally hirsute.

Spikelets 1-1.5 mm. long.

6. *P. setaceum*.

Spikelets 2-2.25 mm. long.

7. *P. Muhlenbergii*.

1. *PASPALUM MEMBRANACEUM* Walt. M. p. 73. Low or wet ground. Summer.

Gloucester—Mickleton (C.). *Salem*—Penn Grove (C.), Riddleton (Li.).

Cape May—Cape May (C.). *Atlantic*—Landisville (C.).

New Castle—Col. Andrews.

2. *PASPALUM DISTICHUM* L. M. p. 73. Wet fields. Summer.

Camden—Kaighn's Point, I. Burk (Fu.).

3. *PASPALUM LAEVE* Michx. M. p. 73. Moist soil. Summer.

4. *PASPALUM GLABRATUM* (Engelm.) Mohr. M. p. 73. Moist soil. Summer.

Cape May—Cape May (Li.) (U. C. S.), Anglesea, Dr. J. B. Brinton (He.).

5. *PASPALUM PUBESCENS* Muhl. M. p. 74. In fields. Summer.

Montgomery—Willow Grove (P.). *Delaware*—Tinicum, Crum Creek (St.). *Chester*—W. Bradford Twp. (St.).

6. *PASPALUM SETACEUM* Michx. M. p. 74. Dry fields. Summer.

7. *PASPALUM MUHLENBERGII* Nash. M. p. 75. Sandy or stony ground. Summer.

Philadelphia—(P.). *Bucks*—Penn Valley (Fr.). *Delaware*—Tinicum (P.). *Chester*—(P.). *Lancaster*—(P.). *Northampton*—(P.).

7. AMPHICARPON Raf.

1. *AMPHICARPON AMPHICARPON* (Pursh.) Nash. M. p. 76. Moist pine barrens. Summer.

8. SYNTHESISMA Walt.

Rachis of the racemes with the angles wingless; first scale of the spikelet wanting, or sometimes present as an inconspicuous rudiment.

1. *S. filiformis*.

Rachis of the racemes with the lateral angles broadly winged; first scale of the spikelet usually present.

Pedicels terete or nearly so, sparingly if at all hispidulous.

2. *S. humifusum*.

Pedicels sharply 3-angled, the angles strongly hispidulous.

3. *S. sanguinalis*.

1. *SYNTHERISMA FILIFORME* (L.) Nash. M. p. 76. Dry sandy soil. Summer.

2. *SYNTHERISMA HUMIFUSUM* (Pers.) Rydb. Fields and waste places. Summer.

Philadelphia—(P.). *Bucks*—(P.). *Delaware*—(P.). *Chester*—(P.).
Lancaster—(P.). *Northampton*—(P.).

3. *SYNTHERISMA SANGUINALIS* (L.) Dulac. *Crab-grass*, *Fall-grass*. M. p. 77. Cultivated places, fields, roadsides, etc. Summer.

9. *BRACHIARIA* Ledeb.

1. *BRACHIARIA DIGITARIOIDES* (Carpenter) Nash. M. p. 77. In water. Summer.

Cape May—*Peermont* (St.), *Wildwood* (VP.).

10. *ECHINOCHLOA* Beauv.

Sheaths glabrous.

1. *E. Crus-galli*.

Sheaths, at least the lower ones, densely papillose-hirsute.

2. *E. Walteri*.

1. *ECHINOCHLOA CRUS-GALLI* (L.) Beauv. *Barnyard-grass*. M. p. 78. Cultivated and waste places. Summer.

2. *ECHINOCHLOA WALTERI* (Pursh.) Nash. M. p. 78. In marshes and ditches. Late summer.

Philadelphia—*Philadelphia* (P.).

New Jersey—Common.

11. *PANICUM* L. PANIC-GRASS.

Spikelets roughened with numerous tubercles, glabrous.

1. *P. verrucosum*.

Spikelets not tuberculate, or if so, the tubercles bearing hairs.

(A) Basal and culm leaves similar, usually elongated; spikelets lanceolate to ovate, commonly the former, acute to acuminate.

Lower sheaths round, or but little flattened, not keeled.

Culms branched, at least at maturity; no scaly rootstocks nor stolons.

Sheaths very pubescent.

Spikelets lanceolate, 3 mm. long or less.

Annuals; pedicels not usually more than 2-3 times as long as the spikelets.

Culm stout; panicle usually included at the base, its many branches repeatedly divided and bearing numerous spikelets.

2. *P. capillare*.

Culms slender; panicle exserted, its few branches but little divided, and bearing comparatively few spikelets.

Spikelets 2 mm. long, acute.

3. *P. Philadelphicum*.

- Spikelets 3 mm. long, acuminate.
 4. *P. flexile*.
- Spikelets ovate, 5 mm. long. 5. *P. miliaceum*.
- Sheaths glabrous. 6. *P. proliferum*.
- Culms simple, from stout, often scaly rootstocks.
- Culms tufted; rootstocks scaly. 7. *P. virgatum*.
- Culms not tufted; rootstocks not scaly; leaves glaucous and very thick. 8. *P. amarum*.
- Lower sheaths much compressed, broad, keeled, often equitant.
- Fourth scale of spikelet sessile.
- Spikelets 3-3.5 mm. long, the apex curved.
 11. *P. rostratum*.
- Spikelets less than 3 mm. long, the apex not curved.
- Ligule naked; culms finally much branched.
 9. *P. agrostoides*.
- Ligule ciliate; culm simple or nearly so.
 10. *P. longifolium*.
- Fourth scale of spikelet distinctly stalked.
 12. *P. stipitatum*.
- (B) Basal and culm leaves dissimilar, the former generally much shorter and broader than the latter; rosulate tufts of leaves often present in the fall; spikelets oval to obovate or globose, obtuse, or rarely acutish (acute in No. 13).
- (1) Middle leaves of the main culm less than 1.5 cm. wide, usually less than 1 cm. in width, the base rounded or truncate, rarely subcordate, sometimes narrowed toward the base.
- (a) Leaves elongated, erect, narrow, distinctly narrowed toward the base, especially the lower ones.
- Spikelets less than 3 mm. long, obtuse or acutish, pubescent.
 14. *P. linearifolium*.
- Spikelets 3-4 mm. long, acute, glabrous.
 13. *P. depauperatum*.
- (b) Leaves not elongated, lanceolate, not manifestly narrowed toward the base.
- Culms, leaves and sheaths glabrous, or the latter two merely ciliate on the margins.
- Spikelets glabrous.
- Nodes of the culm naked.
- Leaves divaricate; culms erect, short, the later branches branched.
 15. *P. dichotomum*.
- Leaves erect; culms accumbent, weak, finally elongated, and the later branches scattered.
 16. *P. lucidum*.
- Nodes of the culm densely barbed.
 17. *P. barbulatum*.
- Spikelets pubescent.
- Spikelets elliptic; leaves smooth above or nearly so, naked at the base. 18. *P. boreale*.
- Spikelets globose, or nearly so; leaves very rough above, thick ciliate at the base.
 30. *P. sphaerocarpon*.
- Culms, sheaths, or leaves, or all of them, pubescent.
- Spikelets 2.5 mm. or less long.
- Leaves glabrous, or if pubescent beneath, the hairs short and soft.
- Culms villous with short hairs, at least below.
- Leaves minutely villous beneath.
 20. *P. Columbianum*.
- Leaves glabrous beneath.
 33. *P. Ashei*.
- Culms not villous.

- Culms glabrous; spikelets about 1.25 mm. long. 19. *P. nitidum*.
 Culms at base densely pubescent, with long, stiff, appressed hairs; spikelets 2-2.5 mm. long..
 27. *P. Commonsianum*.
 Leaves pubescent on both surfaces, especially beneath.
 Hairs on the lower surface short, soft, and copious.
 Spikelets about 1.5 mm. long.
 Densely covered with short hairs on the upper surface.
 25. *P. lanuginosum*.
 Densely covered with scattered long hairs on the upper surface.
 23. *P. Tennesseeense*.
 Spikelets 2.5 mm. long.
 26. *P. scoparium*.
 Hairs on the lower, as well as the upper, surface stiff and long, sometimes scattered.
 Spikelets 1.5 mm. long.
 Culms slender; hairs on the upper surface of the leaves extremely long and copious.
 21. *P. implicatum*.
 Culms rather stout; hairs on the upper surface of the leaves shorter and more scattered, sometimes nearly wanting.
 22. *P. unciphyllum*.
 Spikelets a little more than 2 mm. long.
 24. *P. Atlanticum*.
 Spikelets more than 3 mm. long.
 Panicle narrow, its branches appressed.
 29. *P. xanthophyllum*.
 Panicle open, its branches spreading.
 28. *P. Scribnerianum*.
 (2) Middle leaves of the main culm more than 1.5 cm. wide, often 3 cm. in width, the base cordate and clasping.
 Spikelets 2.5 mm. long or less.
 Leaves glabrous on both surfaces.
 Spikelets about 1.5 mm. long; panicle oblong and dense; culms simple. 31. *P. polyanthes*.
 Spikelets 2.5 mm. long; panicle ovoid and open; culms branched.
 Sheaths pubescent.
 Leaf-blades ciliate at the base; spikelets 3 mm. long or more. 37. *P. clandestinum*.
 Leaf-blades naked at the base; spikelets less than 3 mm. long. 38. *P. decoloratum*.
 Sheaths glabrous. 32. *P. commutatum*.
 Leaves densely villous. 26. *P. scoparium*.
 Spikelets 3 mm. long or more.
 Nodes manifestly and copiously barbed; spikelets 4-5 mm. long.
 Lower surface of the leaf-blades paler, glabrous.
 35. *P. Porterianum*.
 Lower surface of the leaf-blades pubescent, as are also the sheaths and stems. 36. *P. pubifolium*.
 Nodes naked.

Sheaths glabrous, or merely pubescent on the margins; panicle open, its branches spreading.

34. *P. macrocarpon*.

Sheaths hispid; panicle contracted, its branches appressed.

29. *P. xanthophyrum*.

1. *PANICUM VERRUCOSUM* M. p. 81. Moist soil. Summer.
Bucks—Bristol (Fr.). *Delaware*—Darby, Tinicum, (Fu.) (B. Sm.).
Camden—Clementon (Ja.), Haddonfield (VP.). *Gloucester*—Woodbury (C.), Mickleton (He.), Tomlin (Ke.), Swedesboro (Li.). *Cape May*—Anglesea (U. C. S.). *Atlantic*—Landisville (C.). *Ocean*—Manchester (C.), Forked River (Ja.) (Wn.). *Monmouth*—Seabright (C.).
New Castle—Thompsons, Farnhurst, etc.
2. *PANICUM CAPILLARE* L. *Old-witch grass*. M. p. 81. Dry soil. Summer.
3. *PANICUM PHILADELPHICUM* Bernh. M. p. 82. Dry woods and thickets. Summer.
Philadelphia—(P.). *Bucks*—Nockamixon (P.), Sellersville (Fr.). *Lancaster*—(P.).
4. *PANICUM FLEXILE* (Gattinger) Scribn. M. p. 82. Moist or dry soil. Autumn.
Lancaster—Dillerville Swamp (P.).
5. *PANICUM MILLACEUM* L. *Millet*. M. p. 82. Ballast and waste places. Summer.
6. *PANICUM PROLIFERUM* Lam. M. p. 82. Wet soil. Late summer.
7. *PANICUM VIRGATUM* L. M. p. 82. Moist or dry soil. Late summer.
8. *PANICUM AMARUM* Ell. M. p. 83. Sea beaches. Autumn.
9. *PANICUM AGROSTOIDES* Spreng. M. p. 83. Moist soil. Summer.
Bucks—Point Pleasant, Britton (Fr.).
10. *PANICUM LONGIFOLIUM* Torr. M. p. 83. Moist soil. Summer.
Montgomery—(P.). *Northampton*—(P.).
11. *PANICUM ROSTRATUM* Muhl. M. p. 83. Moist soil. Summer.
12. *PANICUM STIPITATUM* Nash. M. p. 83. Moist soil. Summer.
Philadelphia—(P.). *Northampton*—(P.).
13. *PANICUM DEPAUPERATUM* Muhl. M. p. 83. Dry places. Summer.
14. *PANICUM LINEARIFOLIUM* Scribn. M. p. 83. Dry soil. Summer.
Bucks—Perkasie (Fr.), Nockamixon (Pr.). *Delaware*—(P.). *Berks*—(P.). *Northampton*—(P.).
15. *PANICUM DICHOTOMUM* L. M. p. 84. In woodlands and thickets. Early summer.
16. *PANICUM LUCIDUM* Ashe. M. p. 85. Sphagnum bogs. Summer.
Montgomery—Fraser's Bog, Willow Grove (VP.).
Camden—Grenloch (He.).
17. *PANICUM BARBULATUM* Michx. M. p. 85. Moist soil. Summer.
Philadelphia—Germantown (St.). *Bucks*—Tullytown (Fr.). *Delaware*—Tinicum (St.) (VP.). *Crum Creek* (St.). *Chester*—Coatesville, West Chester (St.). *Lancaster*—(P.). *Northampton*—(P.).
Camden—Grenloch (He.), Clementon (VP.). *Gloucester*—Swedesboro (Li.). *Cape May*—Wildwood (He.) (Ja.).

18. *PANICUM BOREALE* Nash. M. p. 85. Moist soil. Summer.
Northampton—(P.).
19. *PANICUM NITIDUM* Lam. M. p. 85. Dry sandy soil. Summer.
20. *PANICUM COLUMBIANUM* Scribn. M. p. 86. Fields and open woods.
Summer.
Burlington—E. Plains (St.). *Gloucester*—Mickleton (He.). *Cape May*
—Wildwood (He.), *Cape May* (St.).
21. *PANICUM IMPLICATUM* Scribn. M. p. 86. Dry soil. Summer.
Northampton—(P.).
22. *PANICUM UNCI-PHYLLUM* Trin. M. p. 86. Dry soil. Summer.
23. *PANICUM TENNESSEENSE* Ashe. M. p. 1040. In woods. Summer.
Lancaster—(P.). *Northampton*—(P.).
24. *PANICUM ATLANTICUM* Nash. M. p. 86. Dry soil. Summer.
Northampton—(P.).
25. *PANICUM LANUGINOSUM* Ell. M. p. 86. Dry sandy soil. Summer.
Bucks—Rock Hill (Fr.).
26. *PANICUM SCOPARIUM* Lam. M. p. 87. Moist soil. Summer.
Delaware—Tinicum (Fu.) (B. Sm.).
Camden—Kaighn's Point, *Mart.* (B. C.). *Gloucester*—Mickleton, Cen-
ter Square (He.), *Swedesboro* (Li.). *Cape May*—Dennisville (C.), *Cape*
May, *Wildwood* (He.), *Anglesea* (Ke.). *Atlantic*—Egg Harbor (Sts.).
New Castle—Townsend, *Canby*.
27. *PANICUM COMMONSIANUM* Ashe. M. p. 87. Dry sandy ridges along the
coast. Summer.
Burlington—E. Plains (St.). *Cape May*—*Cape May* (St.).
28. *PANICUM SCRIBNERIANUM* Nash. M. p. 87. Dry or moist soil. Summer.
Philadelphia—Germantown (St.). *Bucks*—Soliday's Island (Fr.).
Delaware—Glen Riddle (St.). *Chester*—West Chester (St.). *Lancaster*
—Safe Harbor (P.). *Northampton*—Easton (P.).
New Jersey—Middle and southern counties frequent (C.). *Hunterdon*
—Carpentersville, *Holland Station*, *Rosemont* (C.).
29. *PANICUM XANTHOPHYSUM* A. Gray. M. p. 87. Dry soil. Summer.
Bucks—Tullytown (P.).
30. *PANICUM SPHAEROCARPON* Ell. M. p. 88. Dry soil. Summer.
Philadelphia—Wissahickon (VP.), *Germantown* (St.). *Bucks*—Tully-
town, *Bristol*, *Rock Hill* (Fr.). *Montgomery*—Willow Grove (St.). *Dela-*
ware—Crum Creek (St.). *Chester*—Coatesville (St.). *Northampton*—
Easton, *Porter* (He.).
Camden—Ancora (He.). *Cape May*—*Cape May*, *Wildwood* (He.).
Hunterdon—*Rosemont* (C.).
31. *PANICUM POLYANTHES* Schult. M. p. 88. Woods and along thickets.
Summer.
Philadelphia—Wissahickon (VP.). *Bucks*—Tullytown (Fr.). *Del-*
ware—Tinicum (B. Sm.). *Chester*—(P.). *Lancaster*—Tucquan Island
(P.).

32. *PANICUM COMMUTATUM* Schultes. M. p. 88. Dry woods and thickets. Summer.
Bucks—Rock Hill (Fr.). *Delaware*—Marple (B. Sm.). *Lancaster*—(P.). *Northampton*—Easton, Porter (B. C.).
33. *PANICUM ASHEI* G. Pearson. M. p. 88. Dry woods. Summer.
Lancaster—(P.).
34. *PANICUM MACROCARPON* LeConte. M. p. 88. Usually on dry hillsides. Summer.
Philadelphia—Byberry, Mart. (B. C.), Germantown (St.). *Bucks*—Rock Hill (P.). *Delaware*—(P.). *Chester*—Locksley, West Chester (St.). *Northampton*—(P.).
Gloucester—Mickleton (He.).
35. *PANICUM PORTERIANUM* Nash. M. p. 88. Woods. Summer.
36. *PANICUM PUBIFOLIUM* Nash. M. p. 1041. Rocky woods. Summer.
Bucks—Durham, Ruth (Fr.). *Lancaster*—(P.). *Northampton*—(P.).
37. *PANICUM CLANDESTINUM* L. M. p. 88. In thickets. Early summer.
38. *PANICUM DECOLORATUM* Nash. M. p. 1051, 2d edition. Sandy soil. Spring.
Bucks—Tullytown (P.).

12. *CHAETOCHELOA* Scribn. FOX-TAIL GRASS.

- Bristles downwardly barbed. 1. *C. verticillata*.
 Bristles upwardly barbed. 2. *C. glauca*.
 Spike-like inflorescence racemose; second scale much shorter than the spikelet. 3. *C. viridis*.
 Spike-like inflorescence paniculate, sometimes nearly racemose in some forms of No. 3; second scale as long as the spikelet or nearly so. 4. *C. Italica*.
 Flowering scales dull, faintly rugose, obtuse, rather thin in fruit. 5. *C. magna*.
 Inflorescence 2.5-8.5 cm. long, 1.25 cm. or less thick; spikelets about 2 mm. long; bristles green.
 Inflorescence 1-2 dm. long, 1.25-5 cm. thick; spikelets about 3 mm. long; bristles usually purple.
 Flowering scales shining, perfectly smooth, very acute, hard in fruit.
1. *CHAETOCHELOA VERTICILLATA* (L.) Scribn. M. p. 89. Near dwellings and waste places. Summer.
Philadelphia—Byberry, Mart. (B. C.), Manayunk (VP.), City streets (W. Tr.). *Bucks*—(P.). *Chester*—(P.). *Lancaster*—(P.). *Northampton*—Easton, Porter (B. C.).
Camden—Camden (Li.). *Gloucester*—Mickleton (He.), Swedesboro (Li.). *Hunterdon*—Rosemont (C.).
New Castle—Common.
2. *CHAETOCHELOA GLAUCA* (L.) Scribn. *Pigeon-grass*. M. p. 89. In stubble. Summer.
3. *CHAETOCHELOA VIRIDIS* (L.) Beauv. M. p. 90. Cultivated grounds. Summer.
4. *CHAETOCHELOA ITALICA* (L.) Scribn. *Millet*. M. p. 90. Escaped from cultivation. Summer.
5. *CHAETOCHELOA MAGNA* (Griseb.) Scribn. M. p. 90. Swamps. Summer.
Cape May—Cape May (St.).

13. CENCHRUS L. HEDGEHOG or BUE-GRASS.

Involucres less than 5 mm. broad.

1. *C. tribuloides*.

Involucres more than 5 mm. broad.

2. *C. macrocephalus*.

1. CENCHRUS TRIBULOIDES L. M. p. 90. Sandy shores and waste places. Summer.

Philadelphia—(P.). *Bucks*—Near Delaware River (Fr.). *Delaware*—Swarthmore (Pr.), Concord (W. Tr.), Tinicum (B. Sm.). *Chester*—(P.). *Lancaster*—(P.) *Lehigh*—Allentown (Kr.). *Northampton*—(P.). *Dauphin*—(P.).

New Jersey—Common.

New Castle—New Castle and Collins, common.

2. CENCHRUS MACROCEPHALUS (Doell.) Scribn. M. p. 1042. Along the seashore. Summer.
Cape May—Stone Harbor (St.).

14. ZIZANIA L.

1. ZIZANIA AQUATICA L. *Wild Rice, Reed, Indian Rice*. M. p. 91. Swamps. Summer.

15. HOMALOCENCHRUS Mieg.

Spikelets 2.5-3 mm. long; panicle branches usually rigid. 1. *H. Virginicus*.
Spikelets 4-5 mm. long; panicle branches generally lax. 2. *H. oryzoides*.

1. HOMALOCENCHRUS VIRGINICUS (Willd.) Britton. *White Grass*. M. p. 91. Wet woods or swamps. Summer.

Philadelphia—Byberry, Mart. (B. C.), Wissahickon (VP.). *Bucks*—Sellersville (Fr.). *Delaware*—Media (B. Sm.), Concord (W. Tr.). *Chester*—(P.). *Lancaster*—(P.). *Northampton*—Easton, Porter (B. C.).
Camden—Merchantville (Sts.). *Gloucester*—Mickleton (He.), Swedesboro (Li.). *Salem*—Woodstown (Te.). *Hunterdon*—Clinton (Te.).

New Castle—Common.

2. HOMALOCENCHRUS ORYZOIDES (L.) Poll. *Rice Cut-grass*. M. p. 91. Very wet places. Summer.

16. PHALARIS L.

Outer scales not winged.

1. *P. arundinacea*.

Outer scales broadly winged.

2. *P. Canariensis*.

1. PHALARIS ARUNDINACEA L. *Reed Canary-grass*. M. p. 92. Wet grounds. Summer.

2. PHALARIS CANARIENSIS L. *Canary-grass*. M. p. 92. Waste places. Summer.

17. ANTHOXANTHUM L.

1. ANTHOXANTHUM ODORATUM L. *Sweet Vernal Grass*. M. p. 92. Meadows and pastures. Early summer.

18. SAVASTANA L.

1. SAVASTANA ODORATA (L.) Scribn. *Holy-grass*. M. p. 93. Moist meadows near the coast. Summer.

Salem—Salem. *Cape May*—Anglesea (He.). *Ocean*—Point Pleasant (He.). *Monmouth*—Squan Village, Seabright (C.).

19. ARISTIDA L. TRIPLE-AWNED GRASS.

Awns not articulated to the scale.

Central awn coiled at the base.

1. *A. dichotoma*.

Central awn not coiled at the base.

Spikelets exceeding 2 cm. long; first scale 5-7 nerved.

2. *A. oligantha*.

Spikelets less than 1.5 cm. long; first scale 1-3 nerved.

Sheaths glabrous, or pubescent only at the apex.

First scale generally shorter than or equalling the second.

3. *A. gracilis*.

First scale usually exceeding the second.

4. *A. purpurascens*.

Sheaths, at least the lower ones, densely woolly.

5. *A. lanosa*.

Awns articulated to the scale, united at the base into a spiral column.

6. *A. tuberculosa*.

1. *ARISTIDA DICHOTOMA* Michx. *Poverty Grass*. M. p. 94. Dry sandy soil. Late summer.

2. *ARISTIDA OLIGANTHA* Michx. M. p. 95. Dry soil. Late summer.
Philadelphia—(P.). *Delaware*—Fawkes' Run (St.).
Camden—Clementon (VP.).

3. *ARISTIDA GRACILIS* Ell. M. p. 95. Dry soil. Late summer.

4. *ARISTIDA PURPURASCENS* Poir. M. p. 95. Dry soil. Autumn.

5. *ARISTIDA LANOSA* Muhl. M. p. 96. Dry sandy soil. Late summer.
Burlington—Medford (St.).

6. *ARISTIDA TUBERCULOSA* Nutt. M. p. 96. Sandy soil. Autumn.
Monmouth—Sandy Hook, Keyport, Middletown (C.).
New Castle—New Castle Cut-off; Shelpot Creek, Commons and Tatnall.

20. STIPA L.

1. *STIPA AVENACEA* L. *Black-oat Grass*. M. p. 97. Dry woods. Summer.
Philadelphia—Byberry, Mart. (B. C.), Wissahickon (VP.). *Delaware*—Tinicum (Fu.), near Media (B. Sm.), Crum Creek (St.). *Chester*—Oxford (Ca.).

New Jersey—Common.

New Castle—Brandywine, Tatnall; Faulkland and Mount Cuba, Commons.

21. ORYZOPSIS Michx.

1. *ORYZOPSIS MELANOCARPA* Muhl. *Mountain Rice*. M. p. 98. Rocky woods. Summer.

Philadelphia—Wissahickon, C. E. Smith (Fu.). *Bucks*—Rock Hill (Fr.). *Montgomery*—Sumneytown (VP.). *Delaware*—Mount Misery, Lenni, L. L. Smith (B. Sm.). *Berks*—Below Reading, Mart. (B. C.). *Lancaster*—(P.). *Northampton*—Easton, Porter (B. C.).

Hunterdon—Rosemont (C.).

New Castle—Will's Rock, Mount Cuba, Commons.

22. MUHLENBERGIA Schreb.

Panicle contracted, narrow, spike-like, the short branches rarely spreading.

Flowering scale not awned, but sometimes awn-pointed.

Outer scales not awned, about half as long as the flowering scale,
acute. 1. *M. sobolifera*.

Outer scales long-acuminate, awn-pointed or awned.

Outer scales about equal in length to the flowering scale, sharp-
pointed, about 3 mm. long. 2. *M. Mexicana*.

Outer scales exceeding the flowering scale, generally twice its
length, awned, about 5 mm. long. 3. *M. racemosa*.

Flowering scale long-awned; awn usually twice the length of the scale,
sometimes shorter.

Outer scales about equalling the flowering scale. 4. *M. sylvatica*.

Outer scales one-half to two-thirds as long as the flowering scale.
5. *M. tenuiflora*.

Outer scales less than one-third the length of the flowering scale.
6. *M. diffusa*.

Panicle open, its branches long and spreading.

7. *M. capillaris*.

1. MUHLENBERGIA SOBOLIFERA (Muhl.) Trin. M. p. 99. Rocky woods. Late summer.

Philadelphia—Byberry, Mart. (B. C.), Wissahickon (VP.). Bucks—
Sellersville (Fr.). Montgomery—Lafayette, Schuylkill Valley (VP.).
Delaware—(P.). Chester—(P.). Lancaster—(P.). Northampton—
Easton, Porter (B. C.).

Hunterdon—Milford (C.).

New Castle—Brandywine, etc. Frequent.

2. MUHLENBERGIA MEXICANA (L.) Trin. M. p. 99. Low ground. Late summer.

3. MUHLENBERGIA RACEMOSA (Michx.) B. S. P. M. p. 99. Bogs and wet rocks. Late summer.

Bucks—Durham, Ruth (Fr.). Chester—(P.). Lancaster—(P.).

4. MUHLENBERGIA SYLVATICA Torr. M. p. 100. Low or rocky woods. Late summer.

Philadelphia—(P.). Bucks—Sellersville (Fr.). Delaware—Concord
(W. Tr.). Chester—(P.). Lancaster—(P.). Lehigh—Salsburg (Kr.).
Northampton—(P.).

Gloucester—Swedesboro (Li.). Hunterdon—Clinton (Te.).

New Castle—Frequent.

5. MUHLENBERGIA TENUIFLORA (Willd.) B. S. P. M. p. 100. Rocky woods. Late summer.

Philadelphia—Wissahickon (He.). Bucks—Haycock (Fr.). Delaware
—Hey's Dam, Springfield, Dr. Geo. Smith (Fu.), Concord (W. Tr.),
Lewis Mill, Crum Creek (VP.). Chester—(P.). Lancaster—York Fur-
nace (He.). Northampton—Easton, Porter (B. C.).

New Castle—Frequent.

6. MUHLENBERGIA DIFFUSA Willd. Drop-seed, Nimble Will. M. p. 100. Dry hills and woods. Late summer.

7. MUHLENBERGIA CAPILLARIS (Lam.) Trin. Hair-grass. M. p. 100. Dry sandy soil. Autumn.

Lancaster—Gap (P.).

Gloucester—Woodbury (C.). *Atlantic*—Hammonton (C.).
New Castle—Col. Andrews, frequent.

23. BRACHYELYTRUM Beauv.

1. BRACHYELYTRUM ERECTUM (Schreb.) Beauv. M. p. 101. Moist places.
 Summer.

24. HELEOCHLOA Host.

1. HELEOCHLOA SCHOENOIDES (L.) Host. *Rush Cat-tail Grass*. M. p. 102.
 Waste places. Summer.

Philadelphia—2 miles west of Chestnut Hill (VP.). *Bucks*—Bensalem,
Mart. (Fr.). *Delaware*—Haverford, near Friends' Meeting-house, *Dr.*
Geo. Smith (Fu.). *Lancaster*—Columbia and Lancaster (P.).

Camden—Ballast (He.) (Te.). *Mercer*—Trenton (C.).

New Castle—St. Georges (Pr.), Bush's Wharf, *Tatnall*; *Odessa*, *New*
Castle, *Newark*, *Commons*; *Christiana Ave.*

25. PHLEUM L.

1. PHLEUM PRATENSE L. *Timothy*. M. p. 102. Fields and meadows.
 Summer.

26. ALOPECURUS L. FOX-TAIL.

Outer scales of the spikelet united for one-half their length, smooth to hispid
 on the keel. 1. *A. agrestis*.

Outer scales of the spikelet united for one-quarter their length or less, long-
 ciliate on the keel.

Scales 2-2.5 mm. in length.

Scales 4-6 mm. in length.

2. *A. geniculatus*.

3. *A. pratensis*.

1. ALOPECURUS AGRESTIS L. M. p. 103. Ballast. Summer.

Philadelphia—Ballast (P.).

Camden—Ballast.

2. ALOPECURUS GENICULATUS L. M. p. 103. Moist meadows. Summer.

Philadelphia—Below Old Navy Yard, 92d Street Station (St.). *Dela-*
ware—Tinicum, *Dr. Geo. Smith* (Fu.).

Camden—Petty's Island, *Camden* (C.). *Gloucester*—Swedesboro (Li.).

New Castle—Cherry Island near Edgemoor, *Commons*; Bush's, *Tatnall*.

3. ALOPECURUS PRATENSIS L. M. p. 103. Meadows. Summer.

Philadelphia—*Philadelphia*, *Mart.* (B. C.).

New Castle—Wawaset Nurseries.

27. SPOROBOLUS R. Br. DROP-SEED, RUSH-GRASS.

Panicle contracted, spike-like.

Spikelets more than 3.5 mm. in length.

Panicle terminal; upper sheaths 7.5 cm. long or more.

Flowering scale appressed-pubescent below, with long hairs.

1. *S. asper*.

2. *S. longifolius*.

Flowering scale glabrous.

Panicles terminal and lateral; sheaths 3.75 cm. long or less.

3. *S. vaginæflorus*.

4. *S. Indicus*.

Spikelets 3 mm. long or less.

Panicle open, its branches more or less spreading, at least at maturity.

First scale one-half as long as the second or less.

5. *S. heterolepis*.

First scale about equalling the second.

Perennials; culms from long rootstocks.

6. *S. Torreyanus*.

Annuals; roots fibrous, no rootstocks.

7. *S. serotinus*.

1. *SPOROBOLUS ASPER* (Michx.) Kunth. M. p. 104. In dry soil. Autumn.
Lancaster—(P.).
2. *SPOROBOLUS LONGIFOLIUS* (Torr.) Wood. M. p. 105. In dry soil. Late summer.
Bucks—*Nockamixon* (P.). *Montgomery*—(P.). *Lancaster*—(P.).
Northampton—(P.). *Dauphin*—(P.).
3. *SPOROBOLUS VAGINAEFLORUS* (Torr.) Wood. M. p. 105. In dry soil. Summer.
4. *SPOROBOLUS INDICUS* (L.) R. Br. M. p. 106. Ballast. Summer.
Philadelphia—Navy Yard.
Camden—Petty's Island, I. Burk (Fu.).
5. *SPOROBOLUS HETEROLEPIS* A. Gray. M. p. 106. Dry soil. Summer.
Lancaster—Pleasant Grove (Ca.), New Texas (P.).
6. *SPOROBOLUS TORREYANUS* (R & S.) Nash. M. p. 107. Pine barrens. Autumn.
7. *SPOROBOLUS SEROTINUS* (Torr.) A. Gray. M. p. 107. Sandy wet places in pine barrens. Autumn.

28. POLYPOGON Desf.

1. *POLYPOGON MONSPELIENSIS* (L.) Desf. *Beard-grass*. M. p. 108. Ballast. Summer.
Philadelphia—Girard Point, I. Burk (He.). *Bucks*—(P.).

29. CINNA L. WOOD REED GRASS.

Panicle narrow at maturity, its filiform branches erect or drooping; spikelets 4-5 mm. long; first scale much shorter than the second.

1. *C. arundinacea*.

Panicle open, its capillary branches flexuous and drooping; spikelets 3 mm. long; first scale about equalling the second.

2. *C. latifolia*.

1. *CINNA ARUNDINACEA* L. M. p. 108. Moist woods and shaded swamps. Summer.
Pennsylvania—General.
Camden—Camden (C.). *Gloucester*—Mickleton (C.).
2. *CINNA LATIFOLIA* (Trev.) Griseb. M. p. 108. Damp woods. Late summer.
Lancaster—Pequea, A. A. Heller (He.).

30. AGROSTIS L.

Palet conspicuous, at least one-third as long as the scale. 1. *A. alba*.

Palet inconspicuous, minute or wanting.

Third scale awned.

2. *A. canina*.

Third scale not awned, or very rarely bearing a short awn.

Culms weak, usually decumbent and often prostrate at base; leaves lax; spikelets 1.5 mm. long.

3. *A. perennans*.

Culms and leaves erect.

Branches of the panicle capillary, elongated, usually dividing above the middle, the spikelets crowded at the extremities.

Spikelets 1.5-2 mm. long; leaves short.

4. *A. hyemalis*.

Spikelets 2.5-3 mm. long; leaves elongated.

5. *A. altissima*.

Branches of the panicle not elongated, dividing at or below the middle.

6. *A. Scribneriana*.

1. AGROSTIS ALBA L. *Fiorin. Red-top, Herd-grass*. M. p. 109. Meadows and fields. Summer.
2. AGROSTIS CANINA L. *Bent-grass*. M. p. 110. Meadows. Summer.
Philadelphia—Ballast, Mart. (B. C.). *Northampton*—Pot Rock, Easton, Porter (B. C.). *Dauphin*—(P.).
3. AGROSTIS PERENNANS (Walt.) Tuckerm. *Thin-grass*. M. p. 110. Damp, shaded places. Summer.
4. AGROSTIS HYEMALIS (Walt.) B. S. P. *Hair-grass*. M. p. 110. Dry or moist places. Summer.
5. AGROSTIS ALTISSIMA (Walt.) Tuckerm. *Bent-grass*. M. p. 111. Swamps. Late summer.
Montgomery—(P.).
Burlington—Atsion (C.). *Camden*—Atco (C.). *Atlantic*—Atlantic City, C. A. Boice (B. C.), Egg Harbor, Landisville, Hammonton (C.). *Ocean*—Forked River (Li.).
New Castle—McCrones (Farnhurst), *Commons*.
6. AGROSTIS SCRIBNERIANA Nash. M. p. 111. In dry soil. Autumn.
Lancaster—(P.). *Northampton*—(P.).

31. CALAMAGROSTIS Adans.

Prolongation of the rachilla hairy its whole length. 1. *C. Canadensis*.
Prolongation of the rachilla hairy only at the summit. 2. *C. cinnoides*.

1. CALAMAGROSTIS CANADENSIS (Michx.) Beauv. *Blue Joint-grass*. M. p. 112. Wet grounds. Summer.
Montgomery—Fraser's Bog (VP.). *Bucks*—Durham, Ruth (Fr.). *Delaware*—Rhoads Swamp (Fu.), Tinicum (VP.), Concord (W. Tr.). *Lancaster*—(P.). *Lehigh*—Coplay (Kr.). *Northampton*—Easton, Porter (B. C.). *Dauphin*—(P.).
Gloucester—Near Mickelton (He.), Tomlin (Ja.). *Atlantic*—Egg Harbor (Sts.). *Monmouth*—Squan and Shark Rivers (C.).
New Castle—Eli Crosssons, near Bear Station.
2. CALAMAGROSTIS CINNOIDES (Muhl.) Scribn. *Reed-grass*. M. p. 113. Moist ground. Summer.
Bucks—Durham, Ruth (Fr.). *Montgomery*—Fraser's Bog, Willow Grove (VP.). *Delaware*—Tinicum, A. H. Smith (Fu.). *Chester*—(P.). *Lancaster*—(P.). *Dauphin*—(P.).
Camden—Lindenwold (VP.). *Gloucester*—Mickleton (He.), Tomlin (Ke.), Swedesboro (Li.).
New Castle—Brandywine, etc. Scarce.

32. AMMOPHILA Host.

1. AMMOPHILA ARENARIA (L.) Link. *Sea Sand-reed*. M. p. 114. Sandy beaches. Summer.

33. CALAMOVILFA Hack.

1. CALAMOVILFA BREVIPILIS (Torr.) Hack. *Reed-grass*. M. p. 114. Sandy swamps in pine barrens. Late summer.

34. APERA Adans.

1. APERA SPICA-VENTI (L.) Beauv. M. p. 115. Ballast. Summer.
Philadelphia—Girard Point, *I. Burk* (He.).
Camden—Kaighn's Point, *I. Burk* (Fu.).

35. HOLCUS L.

1. HOLCUS LANATUS L. *Meadow Soft-grass, Velvet-grass*. M. p. 115. Fields, meadows and waste places. Summer.

36. AIRA L. HAIR-GRASS.

Panicle open; flowering scales about 2 mm. long; plants 10-25 cm. tall.

1. *A. caryophylla*.

Panicle contracted; flowering scales 3 mm. long; plants 5-8 cm. tall.

2. *A. praecox*.

1. AIRA CARYOPHYLLEA L. M. p. 115. Fields and waste places. Early summer.
Philadelphia—Girard Point (Te.).
Salem—Salem (C.).
New Castle—Townsend and State Road, *Canby*; *Deakynes, Commons*.
2. AIRA PRÆCOX L. M. p. 116. Dry fields. Early summer.
Lehigh—Salsburg (Kr.). *Northampton*—Bethlehem (P.).
Burlington—Medford (St.). *Camden*—Camden, *Mart.* (B. C.), *Gloucester* (C.). *Gloucester*—Mullica Hill, *Berkley* (C.), *Mickleton*, *Timber Creek* (He.). *Cape May*—Cape May (C.), *Wildwood* (He.), *Anglesea* (Li.). *Atlantic*—Somers Point (C.).
AIRA CANESCENS L. Ballast. *Philadelphia*—Greenwich Point (Te.).
AIRA COARCTATA Ehrh. Ballast. *Camden*—Kaighn's Point (He.).

37. DESCHAMPSIA Beauv. HAIR-GRASS.

Flowering scales about 2.5 mm. long, erose-truncate; leaves flat.

1. *D. caespitosa*.

Flowering scales about 4 mm. long, acute or obtuse; leaves involute.

2. *D. flexuosa*.

1. DESCHAMPSIA CAESPITOSA (L.) Beauv. M. p. 116. In wet soil. Summer.
Bucks—Durham, *Ruth* (Fr.). *Chester*—(P.). *Lancaster*—(P.).
2. DESCHAMPSIA FLEXUOSA (L.) Trin. M. p. 116. In dry places. Summer.

38. TRISETUM Pers.

1. TRISETUM PENNSYLVANICUM (L.) Beauv. *False Oat*. M. p. 117. Low grounds. Early summer.

Bucks—Hoot's Dam (Fr.). *Delaware*—Media (B. Sm.). *Chester*—(P.). *Lancaster*—(P.). *Northampton*—(P.). *Dauphin*—(P.).
Camden—Lindenwold (VP.). *Gloucester*—Mickleton (He.), Swedesboro (Li.).

New Castle—Low meadows, frequent.

39. AVENA L.

1. AVENA FATUA L. *Wild Oat*. M. p. 118. Ballast. Summer.
Camden—Camden, I. Burk (He.).

40. ARRHENATHERUM Beauv.

1. ARRHENATHERUM ELATIUS (L.) Beauv. *Oat-grass*. M. p. 118. Fields and waste places. Summer.

Philadelphia—Byberry, Mart. (B. C.), West Park, below Woodside (VP.). *Bucks*—Langhorne (VP.). *Montgomery*—Green Lane (VP.). *Chester*—Thorndale (St.). *Lehigh*—Coplay (Kr.).

Camden—Sicklerville (Ke.). *Gloucester*—Mullica Hill (He.), Swedesboro (Li.). *Monmouth*—Shark River (C.).

New Castle—Fields and meadows, frequent.

41. DANTHONIA DC. WILD OAT-GRASS.

Empty scales 1.25 cm. long or less; sheaths glabrous or sometimes sparingly pubescent at the base.

Teeth of the flowering scale about 1 mm. long, acute; culm leaves short; panicle contracted.

Teeth of the flowering scale 2-3 mm. long, awned; culm leaves elongated; panicle usually open.

Empty scales more than 1.25 cm. long; leaf sheaths villous.

1. *D. spicata*.
 2. *D. compressa*.
 3. *D. sericea*.

1. DANTHONIA SPICATA (L.) Beauv. M. p. 119. Dry or rocky soil. Summer.
2. DANTHONIA COMPRESSA Austin. M. p. 119. Woods. Summer.
Berks—Hamburg (He.) (Ke.).
Gloucester—Swedesboro (Li.).
3. DANTHONIA SERICEA Nutt. M. p. 119. Dry sandy soil. Summer.
Burlington—Speedwell (St.), Brown Mills (Te.). *Camden*—Spring Garden (C.), Lindenwold, Cedar Brook (VP.). *Gloucester*—Williamstown (He.), Swedesboro (Li.). *Cape May*—Batsto (He.). *Atlantic*—Egg Harbor, Dr. Geo. Smith (Fu.), Hammonton (Te.). *Ocean*—Manchester (C.), Forked River (Mac.). *Monmouth*—Ocean Beach (C.).

42. CAPRIOLA Adans.

1. CAPRIOLA DACTYLON (L.) Kuntze. *Bermuda or Scutch-grass*. M. p. 119. Fields and waste places. Summer.

Philadelphia—Navy Yard, Dr. Geo. Smith (Fu.), streets (Ha.). *Bucks*—Bristol (P.). *Delaware*—Marcus Hook (P.). *Northampton*—Bethlehem (P.).

Camden—Camden (He.). *Gloucester*—Mantua (He.), Swedesboro (Li.). *Salem*—Shores of Delaware (C.).

New Castle—New Castle, Wilmington, Commons.

43. SPARTINA Schreb.

First scale awn-pointed, equalling the third; second long-awned.

1. *S. cynosuroides*.

First scale acute, shorter than the third.

First scale strongly scabrous-hispid on the keel.

Leaves 1.25 cm. wide or more, flat.

2. *S. polystachya*.

Leaves 6 mm. wide or less.

3. *S. patens*.

First scale smooth on the keel or occasionally slightly scabrous.

4. *S. stricta*.

1. SPARTINA CYNOSUROIDES (L.) Willd. *Fresh-water Cord-grass*. M. p. 120.

Banks of rivers. Summer.

Philadelphia—(P.). Bucks—Durham, Ruth (Fr.). Chester—(P.).

Lancaster—(P.). Dauphin—(P.).

New Jersey—Common.

New Castle—Bellevue, Tatnall and Commons.

2. SPARTINA POLYSTACHYA (Michx.) Ell. *Salt Reed-grass*. M. p. 120. Salt or brackish water. Summer.

3. SPARTINA PATENS (Ait.) Muhl. *Salt Meadow-grass*. M. p. 120. Salt marshes and sea-beaches.

Philadelphia—Ballast (P.).

New Jersey—Common.

New Castle—Collins' Beach, rare.

4. SPARTINA STRICTA (Ait.) Roth. *Salt Marsh-grass*. M. p. 121. Salt marshes. Summer.

4a. SPARTINA STRICTA ALTERNIFLORA (Lois.) A. Gray. M. p. 121. Salt marshes. Summer.

Salem—Banks of Delaware (C.). Cape May—Cape May (C.). Atlantic—Atlantic City (He.). Ocean—Seaside Park (C.).

44. GYMNOPOGON Beauv.

Spikes bearing spikelets their whole length; awn longer than flowering scale.

1. *G. ambiguus*.

Spikes bearing spikelets above the middle; awn shorter than flowering scale.

2. *G. brevifolius*.

1. GYMNOPOGON AMBIGUUS (Michx.) B. S. P. M. p. 122. Dry sandy soil. Late summer.

Camden—Griffith's Swamp (C.), Berlin (St.), Lindenwold (VP.).

Gloucester—Clarksboro (C.), near Mickleton (He.), Tomlin (Ke.), Swedesboro (Li.). Atlantic—Hammonton (C.).

2. GYMNOPOGON BREVIFOLIUS Trin. M. p. 122. Dry soil. Late summer.

Gloucester—Near Mickleton (He.), near Swedesboro (Li.).

45. ATHEROPOGON Muhl.

1. ATHEROPOGON CURTIPENDULA (Michx.) Fourn. *Musket-grass*. M. p. 123. Dry soil. Summer.

Chester—Serpentine, C. E. Smith (Fu.), near West Chester (Pr.). Lancaster—(P.). Northampton—(P.).

Gloucester—Mickleton (He.), Swedesboro (Li.).

46. ELEUSINE Gaertn.

1. ELEUSINE INDICA (L.) Gaertn. *Wire-grass, Crab-grass.* M. p. 124.
Fields and waste places. Summer.

47. DACTYLOCTENIUM Willd.

1. DACTYLOCTENIUM EGYPTIUM (L.) Willd. *Crab-grass, Yard-grass.* M. p. 123.
Cultivated grounds and waste places. Late summer.
Philadelphia—Philadelphia Salt Works, I. Burk (He.). *Delaware*—
Avondale, Dr. Geo. Smith (Fu.).

48. PHRAGMITES L.

1. PHRAGMITES PHRAGMITES (L.) Karst. *Reed.* M. p. 126. Wet places.
Autumn.
Philadelphia—Point Breeze (P.). *Delaware*—Crum Creek, Dr. Geo. Smith (B. Sm.). *Chester*—(P.).
New Jersey—Frequent.
New Castle—Frequent.

49. TRICUSPIS Beauv.

1. TRICUSPIS SESLERIODES (Michx.) Torr. *Tall Red-top.* M. p. 127. Fields.
Summer.

50. TRIPLASIS Beauv.

1. TRIPLASIS PURPUREA (Walt.) Chapm. *Sand-grass.* M. p. 127. In sand.
Late summer.
Delaware—Tincum (Fu.), Valley of Darby Creek (B. Sm.).
New Jersey—Sea beaches and sands of the yellow drift (C.).
New Castle—Collins, New Castle, Port Penn, Commons.

51. DIPLACHNE Beauv.

1. DIPLACHNE FASCICULARIS (Lam.) Beauv. M. p. 128. Brackish meadows.
Summer.
New Jersey—Common.
New Castle—Port Penn, Commons.

52. ERAGROSTIS Beauv.

- Culms often decumbent at the base and generally branched, 4-5 dm. tall or less; usually annuals.
Spikelets 2-5-flowered, 2-3 mm. long.
Culms branched only at the very base; pedicels and branches of the panicle long and capillary. 1. *E. capillaris.*
Culms branched above the base; pedicels and branches of the panicle short. 2. *E. Frankii.*
Spikelets 5-many-flowered, 3-16 mm. long.
Spikelets 1.5 mm. wide or less.
Flowering scales thin, usually bright purplish, the lateral nerves faint or wanting; spikelets about 1 mm. wide. 3. *E. pilosa.*
Flowering scales firm, usually dull purple or green, the lateral nerves very prominent; spikelets about 1.5 mm. wide. 4. *E. Purshii.*

Spikelets 2 mm. wide or more.

Lower flowering scales about 1.5 mm. long; spikelets 2 mm. wide. 5. *E. Eragrostis*.

Lower flowering scales 2-2.5 mm. long; spikelets 2.5-3 mm. wide. 6. *E. major*.

Culms erect or ascending, simple, rigid, 3-7.5 dm. tall; perennial.

7. *E. pectinacea*.

Culms extensively creeping; flowers diœcious.

8. *E. hypnoides*.

1. *ERAGROSTIS CAPILLARIS* (L.) Nees. M. p. 130. Dry places. Late summer.
Philadelphia—Chestnut Hill (VP.). Bucks—Durham, Ruth (Fr.).
Delaware—(P.). Chester—(P.). Lancaster—(P.). Northampton—
Easton, Porter (B. C.).

Gloucester—Swedesboro (Li.). Hunterdon—Rosemont (C.).

New Castle—Frequent.

2. *ERAGROSTIS FRANKII* Steud. M. p. 130. Moist places. Autumn.
Bucks—Durham, Ruth (Fr.). Chester—W. Bradford (St.). Lancaster
—York Furnace (Ke.). Northampton—Easton (Ca.).

3. *ERAGROSTIS PILOSA* (L.) Beauv. M. p. 130. Sandy waste places. Late summer.

Philadelphia—Byberry, Mart. (B. C.), below Navy Yard, I. Burk (He.).

Bucks—Sellersville (Fr.). Delaware—(P.). Chester—(P.). Lancaster

—(P.). Lehigh—Along Lehigh (Kr.).

New Jersey—Frequent.

New Castle—Frequent.

4. *ERAGROSTIS PURSHII* Schrad. M. p. 130. Dry places. Late summer.
Philadelphia—(P.). Bucks—Nockamixon (Fr.). Chester—(P.). Lan-
caster—York Furnace (He.) (Li.). Northampton—Easton, Porter (B.
C.). Dauphin—(P.).

Camden—Petty's Island (He.). Gloucester—Mullica Hill (He.). Cape

May—Wildwood (He.). Hunterdon—Bull Island (C.).

New Castle—Streets and gutters, Wilmington.

5. *ERAGROSTIS ERAGROSTIS* (L.) Karst. M. p. 130. Waste places. Summer.
Bucks—Bensalem, Mart. (Fr.). Delaware—Cheyney, Dr. Wm. Trimble
(Fu.).

New Castle—Gardens and roadsides. Common.

6. *ERAGROSTIS MAJOR* Host. M. p. 130. Sandy waste places. Summer.

7. *ERAGROSTIS PECTINACEA* (Michx.) Steud. M. p. 131. Sandy dry ground.
Late summer.

8. *ERAGROSTIS HYPNOIDES* (Lam.) B. S. P. M. p. 131. Gravelly shores.
Late summer.

Philadelphia—Banks of Delaware (Ca.). Bucks—Nockamixon (Fr.).

Montgomery—Schuylkill above Manayunk, west and east banks (VP.).

Lancaster—York Furnace (He.) (Ke.). Northampton—Easton, Porter

(B. C.). Dauphin—(P.).

Camden—Kaighn's Point, I. Burk (He.). Salem—Riddleton (He.)

(Li.).

53. *EATONIA* Raf.

Empty scales usually unequal, the first commonly shorter and not more than one-fifth as wide as the second.

Second scale obovate in side view, rounded at the summit.

Leaf-sheaths, blades and stems glabrous. 1. *E. obtusata*.

Leaf-sheaths, blades and stems softly pubescent.

2. *E. pubescens*.

Second scale oblanceolate in side view, acute or acutish at the apex.

3. *E. Pennsylvanica*.

Empty scales usually equal, the first at least as broad as the second.

Leaf-sheaths and blades softly pubescent.

4. *E. nitida*.

Leaf-sheaths and blades glabrous.

5. *E. glabra*.

1. *EATONIA OBTUSATA* (Michx.) A. Gray. M. p. 132. Dry soil. Summer.
Bucks—Andalusia, Mart. (Fr.). Delaware—Radnor, Serpentine, Dr. Geo. Smith (B. Sm.). Chester—(P.). Lancaster—(P.).
Camden—Kaighn's Point, I. Burk (He.).
New Castle—Brandywine, Collins.

2. *EATONIA PUBESCENS* Scribn. & Mer. M. p. 1043. Dry soil. Summer.
Chester—(P.). Lancaster—(P.).

3. *EATONIA PENNSYLVANICA* (DC.) A. Gray. M. p. 132. Moist woods and meadows. Summer.

4. *EATONIA NITIDA* (Spreng.) Nash. M. p. 132. Dry woods. Early summer.
Philadelphia—Wissahickon (VP.). Bucks—Argus, Ridge Valley (Fr.).
Delaware—Marple (B. Sm.). Lancaster—(P.). Lehigh—(P.). Northampton—(P.).
Gloucester—Mickleton (He.), Swedesboro (Li.). Hunterdon—Rosemont (C.).
New Castle—Townsend, Canby.

5. *EATONIA GLABRA* Nash. M. p. 1043. In woods. Early summer.
Lancaster—Tucquan Creek (P.).

KOELERIA PHLOEOIDES Pers. Ballast. Summer.

Philadelphia—Girard Point, I. Burk (He.).

54. MELICA L. MELIC-GRASS.

1. *MELICA MUTICA* Walt. M. p. 133. In rich soil. Summer.
Lancaster—Safe Harbor (P.). Berks—Near Reading (P.).

55. UNIOLA L. SPIKE-GRASS.

Spikelets about 6 mm. in length; panicle spike-like.

1. *U. laxa*.

Spikelets exceeding 1.25 cm. in length; panicle open.

2. *U. latifolia*.

1. *UNIOLA LAXA* (L.) B. S. P. M. p. 135. Sandy soil. Summer.
2. *UNIOLA LATIFOLIA* Michx. M. p. 135. Shaded slopes. Autumn.
Philadelphia—Germantown, Dr. Geo. Smith (Fu.). Lancaster—McCall's Ferry, Porter (B. C.).
New Castle—Above Brandywine Bridge, rare.

56. DISTICHLIS Raf.

1. *DISTICHLIS SPICATA* (L.) Greene. Spike-grass. M. p. 135. Salt meadows. Summer.

57. DACTYLIS L.

1. *DACTYLIS GLOMERATA* L. Orchard-grass. M. p. 136. Fields and waste places. Summer.

58. POA L. MEADOW-GRASS, SPEAR-GRASS.

Annual; culms low and densely tufted, commonly less than 2 dm.

1. *P. annua*.

Perennials; culms tall, usually exceeding 2 dm.

Culms tufted, usually densely so.

Basal leaves much shorter than the culms.

Flowering scales not webby at the base.

6. *P. autumnalis*.

Flowering scales webby at the base.

Lateral nerves of the flowering scales glabrous.

4. *P. trivialis*.

Lateral nerves of the flowering scales pubescent.

Intermediate nerves of the flowering scale obscure.

2. *P. flava*.

Intermediate nerves prominent.

Spikelets crowded on the spreading or ascending branches; mid-nerve of the flowering scale pubescent only below.

3. *P. pratensis*.

Spikelets scattered on the spreading, often reflexed branches; mid-nerve pubescent its whole length.

5. *P. sylvestris*.

Basal leaves very long, the early ones frequently as long as the culms.

7. *P. brevifolia*.

Culms not tufted; rootstocks long, creeping.

8. *P. compressa*.

1. POA ANNUA L. *Low Spear-grass*. M. p. 138. Cultivated and waste ground. Spring.

2. POA FLAVA L. *False Red-top, Fowl Meadow-grass*. M. p. 139. Swampy places. Summer.

Bucks—Durham, Ruth. Delaware—Upper Darby, Dr. Geo. Smith (Fu.).

Northampton—(P.).

Camden—Ballast (He.). Gloucester—Mickleton (He.), Repaupo (Ja.), Swedesboro (Li.).

New Castle—River Shore, Holly Oak, Commons.

3. POA PRATENSIS L. *June-grass, Kentucky Blue-grass*. M. p. 139. Dry soil. Summer.

4. POA TRIVIALIS L. M. p. 139. Meadows and waste places. Summer.

Philadelphia—Ballast, E. Dittenbaugh (B. C.). Bucks—Sellersville (Fr.). Delaware—Swarthmore (B. Sm.). Chester—Paoli (Te.). Lancaster—(P.). Northampton—(P.).

Gloucester—Mickleton (He.), Tomlin (Ja.), Swedesboro (Li.), Timber Creek (Te.). Hunterdon—Frequent (C.).

5. POA SYLVESTRIS A. Gray. M. p. 139. Thickets and meadows. Early summer.

Philadelphia—(P.). Bucks—Nockamixon, A. P. Garber (P.). Delaware—Swarthmore, E. T. Cresson, Jr. (B. Sm.). Chester—Valley Forge (P.). Lancaster—(P.). Northampton—Easton, Porter (B. C.).

6. POA AUTUMNALIS Muhl. M. p. 140. Dry woods. Spring.

Bucks—Nockamixon (Fr.). Lancaster—Bart and Martie Townships (P.).

New Castle—Harvey, opposite Bancrofts, Commons; Brandywine, Canby.

7. POA BREVIFOLIA Muhl. M. p. 140. Rocky woods. Spring.

Philadelphia—Wissahickon, Mart. (B. C.), Robinson's Knoll (Te.).

Bucks — Pipersville, Moyer (Fr.). *Delaware* — Swarthmore, Dr. J. B. Brinton (B. C.), Wawa (He.) (Ke.) (Li.), Haverford (Le.), Valley of Darby Creek (B. Sm.), Ridley Creek, near West Chester pike (VP.).

New Castle — Brandywine, scarce.

6. *POA COMPRESSA* L. *Wire-grass*, *English Blue-grass*. M. p. 141. Waste places, cultivated ground and woods. Summer.

59. *PANICULARIA* Fabr. MANNA-GRASS.

Spikelets ovate or oblong, 8 mm. long or less.

Flowering scales very broad, obscurely, or at least not sharply nerved.

Panicle open, the branches ascending or spreading, often drooping.

Spikelets 3-5 flowered, lowest flowering scale about 2 mm. long.

1. *P. laxa*.

Spikelets 5-12-flowered; lowest flowering scale about 3 mm. long.

2. *P. Canadensis*.

Panicle contracted, the branches erect.

3. *P. obtusa*.

Flowering scales narrow, sharply and distinctly 7-nerved.

Panicle elongated, its branches erect or appressed. 4. *P. elongata*.

Panicle not elongated, open, its branches spreading or drooping, rarely erect.

Scales about 2 mm. long, obtuse or rounded at the apex.

Spikelets 3 mm. long or less; branches of the panicle often drooping. 5. *P. nervata*.

Spikelets 4-6 mm. long; branches of the panicle ascending or spreading. 6. *P. Americana*.

Scales 2.5-3 mm. long, truncate and denticulate at the apex.

7. *P. pallida*.

Spikelets linear, 12 mm. long or more.

Flowering scales 4-5 mm. long, obtuse, equalling or exceeding the obtuse palet. 8. *P. fluitans*.

Flowering scale 6-8 mm. long, shorter than the acuminate palet.

9. *P. acutiflora*.

1. *PANICULARIA LAXA* Scribn. M. p. 143. In water or wet soil. Summer. *Gloucester* — Mickleton (He.).

2. *PANICULARIA CANADENSIS* (Michx.) Kuntze. *Rattlesnake-grass*. M. p. 143. Bogs and wet places. Summer.

3. *PANICULARIA OBTUSA* (Muhl.) Kuntze. M. p. 143. Bogs near the coast. Summer.

Burlington — Moorestown (Sts.), Atsion (Te.). *Camden* — Kaighn's Swamp, Mart. (B. C.), Ancora (Te.), Lindenwold, Clementon, Haddonfield (VP.). *Gloucester* — Near Mickleton (He.), Paulsboro (Ja.), Tomlin (Ke.), Swedesboro (Li.). *Atlantic* — Hammonton (Fr.) (Ke.), Egg Harbor (Ke.). *Ocean* — Toms River (Te.).

New Castle — St. George's and Duck Creek, Commons; Thompsons, Tatnall; Canal near Delaware City, Tatnall and Commons.

4. *PANICULARIA ELONGATA* (Torr.) Kuntze. M. p. 143. Wet woods. Summer.

Bucks — Rock Hill (Fr.). *Delaware* — Tinicum, Aubrey H. Smith (B. Sm.). *Lancaster* — (P.). *Northampton* — Wind Gap, Pen Argyl (He.).

Monmouth — Holmdel (C.). *Hunterdon* — Stockton (C.).

5. *PANICULARIA NERVATA* (Willd.) Kuntze. M. p. 144. Moist meadows. Summer.

6. *PANICULARIA AMERICANA* (Torr.) MacM. M. p. 144. Wet soil. Summer.

Bucks—Durham, *Ruth* (Fr.). *Lancaster*—(P.). *Northampton*—(P.).

7. *PANICULARIA PALLIDA* (Torr.) Kuntze. M. p. 144. Shallow water. Summer.

Philadelphia—(P.). *Bucks*—Sellersville (Fr.). *Delaware*—Tinicum, *Aubrey H. Smith* (B. Sm.). *Northampton*—(P.).

Camden—Kaighn's Point, *C. F. Parker* (B. C.). *Gloucester*—Mickleton (He.), *Repaupo* (Li.). *Salem*—Riddleton (Li.). *Atlantic*—Landisville (C.).

New Castle—Frequent.

8. *PANICULARIA FLUTTANS* (L.) Kuntze. M. p. 144. Shallow water. Summer.

9. *PANICULARIA ACUTIFLORA* (Torr.) Kuntze. M. p. 144. Wet places. Summer.

Philadelphia—Byberry, *Mart.* (B. C.). *Bucks*—Tullytown (P.).

Camden—Gloucester, *Merchantville* (C.). *Gloucester*—Near Mickleton (He.).

60. *PUCCINELLIA* Parl.

1. *PUCCINELLIA DISTANS* (L.) Parl. *Spreading Meadow-grass*. M. p. 145.

Salt marshes along coast and ballast.

Philadelphia—Girard Point (Te.).

New Jersey—Frequent along the coast (C.).

New Castle—Port Penn, Collins, Delaware City, *Commons*; Wilmington, south side, near Market Street, *Commons* and *Tatnall*.

61. *FESTUCA* L. FESCUE-GRASS.

Leaves 2 mm. wide or less, usually involute or folded.

Annuals; flowering scales long-awned.

First scale more than one-half as long as the second; awn not exceeding the length of the flowering scale. 1. *F. octoflora*.

First scale less than one-half as long as the second; awn much longer than the flowering scale. 2. *F. Myuros*.

Perennial; flowering scales short-awned. 3. *F. ovina*.

Leaves 4 mm. wide or more, flat.

Flowering scales 5-7 mm. long; spikelets 5-10 flowered. 4. *F. elatior*.

Flowering scales 4 mm. long or less; spikelets 3-6 flowered.

Spikelets very broad; branches of the panicle spikelet-bearing from the middle or below. 5. *F. Shortii*.

Spikelets lanceolate; branches of the panicle elongated, spikelet-bearing at the end. 6. *F. nutans*.

1. *FESTUCA OCTOFLORA* Walt. M. p. 146. Dry sterile soil. Summer.

Philadelphia—Byberry, *Mart.* (B. C.). *Bucks*—Ridge Road (Fr.).

Delaware—Concord (W. Tr.). *Chester*—(P.). *Lancaster*—(P.). *Northampton*—Easton, *Porter* (B. C.).

New Jersey—Common.

New Castle—Frequent.

2. *FESTUCA MYUROS* L. M. p. 146. Dry fields. Summer.

Bucks—Rock Hill, *Dr. J. B. Brinton* (Fr.).

Camden—Kaighn's Point, *Mart.* (B. C.). *Gloucester*—Mickleton (He.),

Repaupo (Ja.), Swedesboro (Li.). *Cape May*—Cape May Point (Te.).
Monmouth—Squan (C.).

New Castle—Townsend, Canby; Deakynes, Commons.

3. *FESTUCA OVINA* L. *Sheep's Fescue*. M. p. 146. Fields and waste places. Summer.

Delaware—Swarthmore, E. T. Cresson, Jr. (B. Sm.).

Camden—Grenloch (He.). *Gloucester*—Wenonah (He.), Swedesboro (Li.). *Cape May*—Wildwood (Li.).

- 3a. *FESTUCA OVINA DURIUSCULA* (L.) Hack. M. p. 147.

Philadelphia—Girard Point (Te.). *Bucks*—Andalusia, Mart. (Fr.).
Chester—(P.). *Northampton*—(P.).

Cape May—Cape May, Dr. Geo. Smith (Fu.), Holly Beach (He.), Anglesea (Li.).

4. *FESTUCA ELATIOR* L. *Taller Fescue*. M. p. 147. Fields and waste places. Summer.

5. *FESTUCA SHORTII* Kunth. M. p. 147. In woods and thickets. Summer.
Lancaster—Dillerville Swamp (P.).

62. *BROMUS* L. BROME-GRASS.

Lower empty scale 1-nerved, the upper 3-nerved.

Awn shorter than the flowering scale or wanting; perennials 6-12 dm. tall.

Flowering scales glabrous, or pubescent on the margins.

1. *B. ciliatus*.

Flowering scales densely pubescent all over the back.

2. *B. purgans*.

Awn longer than the flowering scale; low annuals 3-6 dm. tall.

Flowering scales appressed-hirsute, 8-12 mm. long.

3. *B. tectorum*.

Flowering scales sparsely appressed-hispidulous.

4. *B. sterilis*.

Lower empty scale 3-nerved, the upper 5-9-nerved.

Flowering scales awned.

Flowering scales pubescent.

Pubescence dense, consisting of long silky hairs.

5. *B. Kalmii*.

Pubescence of short appressed hairs, not dense.

6. *B. hordaceus*.

Flowering scales glabrous or minutely roughened.

Nerves of the turgid flowering scales obscure; sheaths glabrous.

7. *B. secalinus*.

Nerves of the flowering scale prominent; sheaths softly and densely pubescent with reflexed hairs.

8. *B. racemosus*.

Flowering scales awnless, nearly as broad as long.

9. *B. brizaeformis*.

1. *BROMUS CILIATUS* L. *Woodchess*. M. p. 149. Woods and thickets. Summer.

Philadelphia—Byberry, Mart. (B. C.), Wissahickon (He.). *Bucks*—Rock Hill (Fr.) (Ja.). *Delaware*—Hey's Dam, Dr. Geo. Smith (Fu.), Burmont (B. Sm.), Ridley Creek, Darby Creek, Crum Creek, Lewis Mill, Castle Rock (VP.). *Chester*—Valley Forge (He.). *Lancaster*—(P.).
Northampton—Easton, Porter (B. C.).

Cape May—Wildwood (He.).

2. *BROMUS PURGANS* L. M. p. 149. Woods and thickets. Summer.

Philadelphia—Wissahickon (He.). *Northampton*—(P.).

Hunterdon—Frequent along the Delaware (C.).

New Castle—Frequent.

3. *BROMUS TECTORUM* L. M. p. 149. Fields and waste places. Early summer.

Bucks—Bristol (P.), Tullytown, Sellersville, Telford (Fr.). *Northampton*—Streets of Easton (P.).

New Jersey—Common.

New Castle—Collins, Commons; Odessa, Clayton, Commons and Tatnall.

4. *BROMUS STERILIS* L. M. p. 150. Waste places and ballast. Summer.
Philadelphia—Banks of Schuylkill (He.), Wayne Junction P. & R. railroad (Je.), Robinson's Knoll, West Park (VP.). *Bucks*—Telford (Fr.).
Montgomery—Above Manayunk (VP.). *Northampton*—Easton (P.).
Atlantic—Atlantic City (Te.).

5. *BROMUS KALMI* A. Gray. M. p. 150. Woods and thickets. Summer.
Bucks—Ridge Valley (Fr.). *Delaware*—Evans' Cemetery, Radnor, Dr. Geo. Smith (B. Sm.). *Lancaster*—(P.). *Northampton*—Easton, Porter (B. C.).

6. *BROMUS HORDACEUS* L. M. p. 150. Fields and waste places. Summer.
Philadelphia—Ballast, C. A. Boice (B. C.). *Chester*—(P.).
Gloucester—Swedesboro (Li.). *Atlantic*—Hammononton (C.).

7. *BROMUS SECALINUS* L. *Cheat* or *Chess*. M. p. 150. Fields and waste places. Summer.

8. *BROMUS RACEMOSUS* L. M. p. 150. Fields and waste places. Summer.

9. *BROMUS BRIZAEFORMIS* Fisch. & Mey. M. p. 151. Introduced. Summer.
Lancaster—(P.).

63. *LOLIUM* L. RAY-GRASS, DARNEL.

Empty scale shorter than the spikelet.

Flowering scales awnless.

Flowering scales awned.

Empty scale equalling or extending beyond the flowering scales.

1. *L. perenne*.

2. *L. italicum*.

3. *L. temulentum*.

1. *LOLIUM PERENNE* L. *Rye-grass*. M. p. 152. Fields and waste places. Summer.

2. *LOLIUM ITALICUM* A. Br. M. p. 152. Fields and waste places. Summer.
New Castle—Pastures; rare.

3. *LOLIUM TEMULENTUM* L. *Darnel*. M. p. 152. Waste places and cultivated grounds. Summer.

Philadelphia—Ballast (P.). *Delaware*—Concord (W. Tr.). *Northampton*—(P.).

Camden—Kaighn's Point, Dr. E. G. Hunt (He.).

New Castle—Noxentown, Centerville, Collins, Commons.

64. *AGROPYRON* J. Gaertn. WHEAT GRASS.

Culms tufted, no creeping rootstocks or stolons.

1. *A. caninum*.

Culms from creeping rootstocks.

2. *A. repens*.

1. *AGROPYRON CANINUM* (L.) R. & S. M. p. 153. Cultivated ground and meadows. Summer.

New Castle—Low ground east of Thompson's Swamp, *Commons*.

2. *AGROPYRON REPENS* (L.) Beauv. *Couch-grass, Quitch-grass*. M. p. 153.
Fields and waste places. Summer.

65. HORDEUM L.

Flowering scales, exclusive of awn, 6-8 mm. long.

Awn of the flowering scale 1.25 cm. long or less.

Awn of the flowering scale 2.5 cm. long or more.

Flowering scales, exclusive of awn, about 1.2 cm. long.

1. *H. nodosum*.

2. *H. jubatum*.

3. *H. murinum*.

1. *HORDEUM NODOSUM* L. *Meadow-Barley*. M. p. 155. Meadows and waste places. Summer.

Bucks—Perkasie, in ditches (Fr.).

Cape May—Goshen Landing (He.).

2. *HORDEUM JUBATUM* L. *Squirrel-tail Grass*. M. p. 155. Dry soil. Summer.

Philadelphia—Commons, Mart. (B. C.). *Bucks*—Quakertown, Telford (Fr.). *Montgomery*—Ambler (Fr.). *Delaware*—Tinicum, rare (VP.).

Chester—Valley Forge (W. Tr.). *Lancaster*—West Grove (Ca.).

Camden—Kaighn's Point (Ja.). *Atlantic*—Hammonton (C.), Atlantic City (He.). *Mercer*—Trenton (C.).

New Castle—Shores, Woodland Beach, *Commons*.

3. *HORDEUM MURINUM* L. *Wall-Barley*. M. p. 155. Ballast and waste places. Summer.

Philadelphia—Fairmount Park (Ja.).

Camden—Kaighn's Point (He.).

66. ELYMUS L. LYME-GRASS, WILD RYE.

Empty scales narrowly awl-shaped; spike slender.

1. *E. striatus*.

Empty scales linear-lanceolate to linear; spike stout.

Flowering scales glabrous.

Flowering scales more or less appressed-pubescent, usually densely so.

2. *E. Virginicus*.

3. *E. Canadensis*.

1. *ELYMUS STRIATUS* Willd. M. p. 156. Rocky woods and banks. Summer.

Philadelphia—Wissahickon (VP.). *Delaware*—Marple, Dr. Geo. Smith

(Fu.), Valley of Darby Creek (B. Sm.), Concord (W. Tr.). *Chester*—

(P.). *Lancaster*—(P.). *Northampton*—Easton, Porter (B. C.).

Cape May—Wildwood (He.). *Hunterdon*—Rosemont, Ridge Island (C.).

New Castle—Mount Cuba, Greenbank, Brandywine, *Commons*.

2. *ELYMUS VIRGINICUS* L. M. p. 156. Along streams. Summer.

3. *ELYMUS CANADENSIS* L. M. p. 157. River banks. Summer.

67. HYSTRIX (L.) Millsp.

1. *HYSTRIX HYSTRIX* (L.) Millsp. *Bottle-brush Grass*. M. p. 158. Rocky woods. Summer.

Philadelphia—Schuylkill, near junction of Wissahickon (He.). *Bucks*

—Sellersville (Fr.). *Montgomery*—Above Lafayette (VP.), Skippack

Creek, Sumneytown (VP.). *Delaware*—Wawa (Ke.), Lansdowne (Pe.),

Rhoads' Swamp, Marple (B. Sm.), Concord (W. Tr.). Chester—St. Peter's (Ke.), Brandywine Creek (Pr.). Lancaster—(P.). Northampton—(P.).

Burlington—Ameytown (C.). Mercer—Princeton (Te.).

New Castle—Frequent.

68. ARUNDINARIA Michx.

1. ARUNDINARIA TECTA (Walt.) Muhl. *Switch Cane, Small Cane.* M. p.

158. Swamps and moist soil. Summer.

Delaware—Painter's Arboretum (He.).

Family 2. CYPERACEAE J. St. Hil. Sedge Family.

Flowers of the spikelet all, or at least one of them, perfect; spikelets all similar.

Scales of the spikelets 2-ranked.

Perianth none; spikelets in solitary or umbelled terminal heads.

1. *Cyperus.*

Perianth of 6-9 bristles; inflorescence axillary.

2. *Dulichium.*

Scales of the spikelets spirally imbricated all around.

Spikelets with several to many perfect flowers.

Base of the style swollen, persistent as a tubercle on the achene.

Leaves reduced to basal sheaths; bristles of the perianth usually present; spikelet solitary.

3. *Eleocharis.*

Culm leafy; perianth-bristles none; spikelets in a terminal umbel.

4. *Stenophyllus.*

Base of the style enlarged or narrow, deciduous.

Flowers with no broad sepals or interior perianth-scales.

Style swollen at the base; bristles none.

5. *Fimbristylis.*

Style not swollen at the base; bristles usually present.

Spikelets solitary to many; bristles 1-6, rarely none.

6. *Scirpus.*

Spikelets solitary or few; bristles 6-many, soft, smooth, very long, slender, much exserted.

7. *Eriophorum.*

Flowers with a perianth of 3-stalked sepals or of 1 or 2 interior hyaline scales.

8. *Fuirena.*

Spikelets 1-4-flowered, some of the flowers imperfect.

Style, or its base, persistent as a tubercle on the achene.

9. *Rynchospora.*

Style wholly deciduous.

10. *Cladium.*

Flowers all monocious or diceious, usually borne in separate small spikelets.

Achene not enclosed in a utricle.

11. *Scleria.*

Achene enclosed in a utricle (perigynium).

12. *Carex.*

1. CYPERUS L. GALINGALE.

Style 2-cleft; achene lenticular, not 3-angled; scales falling from the rachis; spikelets flat.

Spikelets yellow; superficial cells of the achene oblong.

1. *C. flavesens.*

Spikelets green or brown; superficial cells of the achene quadrate.

Scales obtuse or obtusish, appressed.

Scales membranous, dull; style much exserted.

2. *C. diandrus.*

Scales subcoriaceous, shining; style scarcely exserted.

3. *C. rivularis.*

Scales acute, somewhat spreading at maturity.

4. *C. Nuttallii.*

Style 3-cleft; achene 3-angled.

Scales falling away from the persistent rachis of the flattened spikelet.

Wings of the rachis, if present, permanently adnate to it.

Scales tipped with recurved awns; low annual, 2-15 cm. tall.

5. *C. inflexus*.

Scales acute or obtuse, not awned.

Wings of the rachis none or very narrow.

Stamens 3; spikelets linear-oblong, 8-25 mm. long; scales acute.

6. *C. compressus*.

Stamen 1; spikelets ovate, 4-8 mm. long.

7. *C. pseudovegetus*.

Wings of the rachis evident.

Low annual, adventive from Europe; scales brown.

8. *C. fuscus*.

Tall indigenous perennials.

Scales mucronate, reddish-brown or green.

9. *C. dentatus*.

Scales acute or obtuse, not mucronate.

Scales wholly or partly purple-brown; achene linear.

10. *C. rotundus*.

Scales straw-colored; achene ovoid.

11. *C. esculentus*.

Wings of the rachis separating from it as interior scales; annuals.

12. *C. erythrorhizos*.

Spikelets falling away from the axis of the spikes, the lower pair of scales commonly persistent.

Annuals; spikelets elongated, nearly terete.

Scales imbricated; achene obovoid.

13. *C. speciosus*.

Scales distant; achene linear-oblong.

14. *C. Engelmanni*.

Perennial by hard, tuber-like basal corms; spikelets more or less flattened.

Achene narrowly linear-oblong, 3-4 times as long as thick.

Spikelets flat, several-many-flowered.

15. *C. strigosus*.

Spikelets subterete, few-flowered.

Spikelets 12-25 mm. long, loosely spicate; lower reflexed.

16. *C. refractus*.

Spikelets 3-12 mm. long, densely capitate or spicate.

Spikelets all reflexed; culms rough.

17. *C. retrofractus*.

Spikelets spreading or only the lower reflexed; culms smooth.

Heads oblong or cylindric.

Spikelets 6-10 mm. long, the lower reflexed.

18. *C. Lancasteriensis*.

Spikelets 3-4 mm. long, the lower spreading.

19. *C. cylindricus*.

Heads globose.

20. *C. ovularis*.

Achene oblong or obovoid, about twice as long as thick.

Rachis wingless or very narrowly winged.

21. *C. filiculmis*.

Rachis-wings membranous, broad.

Scales firm, not appressed, spikelet loosely capitate.

22. *C. Grayi*.

Scales thin, closely appressed; spikelets densely capitate.

23. *C. echinatus*.

1. *CYPERUS FLAVESCENS* L. M. p. 161. Low grounds. Summer.

Philadelphia—Byberry, *Mart.* (B. C.), on the Delaware River (P.).

Bucks—Near Bristol, *Mart.* (Fr.). *Delaware*—Wawa (P.), Valley of Darby Creek (B. Sm.). *Lancaster*—(P.). *Northampton*—Easton (P.).

Dauphin—(P.).

Burlington — Atsion (He.). *Camden* — Ballast (C.). *Gloucester* — Mickleton (C.), Swedesboro (Li.). *Cumberland* — Jericho (C.). *Atlantic* — May's Landing (He.). *Ocean* — Goodluck Point, Manchester, Toms River (C.), Forked River (Ja.).

New Castle — St. George's, Canby; Dupont's Pier. Frequent.

2. *CYPERUS DIANDRUS* Torr. M. p. 161. Low grounds. Late summer.

Philadelphia — Byberry, Mart. (B. C.). *Bucks* — Near Sellersville (Fr.). *Montgomery* — (P.). *Chester* — Uwchlan Twp. (Pr.). *Lancaster* — York Furnace (He.). *Northampton* — Easton, Porter (B. C.).

New Jersey — Common.

New Castle — Common.

3. *CYPERUS RIVULARIS* Kunth. M. p. 161. Low grounds. Late summer.

Bucks — Sellersville (Fr.). *Delaware* — Tinicum, C. E. Smith (P.). *Northampton* — Island Park (P.).

New Jersey — General (C.).

New Castle — Odessa, St. George's, Commons.

4. *CYPERUS NUTTALLII* Eddy. M. p. 161. Salt marshes. Summer.

Philadelphia — Ballast (P.). *Delaware* — Chester, T. C. Palmer (Fu.).

New Jersey — Common.

New Castle — St. George's, Canby.

5. *CYPERUS INFLEXUS* Muhl. M. p. 162. Sandy wet soil. Summer.

Bucks — Near Point Pleasant (Fr.). *Montgomery* — Sumneytown (VP.). *Chester* — Willistown (VP.). *Lancaster* — York Furnace (Li.). *Northampton* — (P.). *Dauphin* — (P.).

New Castle — Frequent.

6. *CYPERUS COMPRESSUS* L. M. p. 162. Fields. Late summer.

Philadelphia — Ballast (P.).

New Castle — St. George's, Commons.

7. *CYPERUS PSEUDOVEGETUS* Steud. M. p. 162. Wet places. Summer.

New Castle — Railroad, Townsend, Commons; Van Dyke.

8. *CYPERUS FUSCUS* L. M. p. 162. Ballast. Summer.

Camden — Kaighn's Point, Dr. Geo. Smith (Fu.).

9. *CYPERUS DENTATUS* Torr. M. p. 163. Sandy swamps. Late summer.

Bucks — Near Bristol (Fr.). *Lancaster* — (P.). *Northampton* — (P.). *Dauphin* — (P.).

Burlington — Atsion (He.), near Brown Mills Junction (Sa.). *Salem* — Riddleton (Cr.). *Atlantic* — May's Landing (He.), Egg Harbor (Ja.), Elwood (Te.). *Ocean* — Forked River (He.).

Hunterdon — Along Delaware, common (C.).

10. *CYPERUS ROTUNDUS* L. M. p. 163. Sandy fields. Summer.

Delaware — (P.). *Northampton* — Bethlehem (P.).

New Castle — Alluvial soil and gardens. Frequent.

11. *CYPERUS ESCULENTUS* L. M. p. 163. Low grounds. Late summer.

12. *CYPERUS ERYTHORRHIZOS* Muhl. M. p. 163. Alluvial banks. Late summer.

Philadelphia — Navy Yard, Dr. Geo. Smith (Fu.). *Delaware* — (P.). *Dauphin* — Forsters Island (P.).

- Camden*—Petty's Island (C.); *Camden*, P. R. R. wharf (He.). *Gloucester*—Swedesboro (Li.).
New Castle—Townsend and river shore.
13. *CYPERUS SPECIOSUS* Vahl. M. p. 164. Marshes. Summer.
Philadelphia—Falls of Schuylkill (Ja.).
Cape May—Cape May (Te.), Stone Harbor, Wildwood (VP.). *Atlantic*—May's Landing (C.), Hammonton, Dr. J. B. Brinton (He.). *Ocean*—Manchester (C.).
New Castle—River shore, Canby.
14. *CYPERUS ENGELMANNI* Steud. M. p. 164. Low grounds. Late summer.
Camden—Kaighn's Point, Dr. Geo. Smith (Fu.).
15. *CYPERUS STRIGOSUS* L. M. p. 164. Damp or fertile soil. Late summer.
- 15a. *CYPERUS STRIGOSUS ROBUSTIOR* Kunth. M. p. 165. Range of type.
Bucks—Bristol (Fr.).
16. *CYPERUS REFRACTUS* Engelm. M. p. 165. Dry fields. Summer.
Delaware—Ridley (B. Sm.).
Camden—Kaighn's Point (Li.).
17. *CYPERUS RETROFRACTUS* (L.) Torr. M. p. 165. Sandy fields. Summer.
Philadelphia—(P.). *Chester*—(P.).
Camden—Haddonfield, Griffith's Swamp (C.). *Gloucester*—Malaga (C.), National Park (Cr.), Swedesboro (Li.). *Atlantic*—Hammonton (C.).
New Castle—Brandywine, frequent.
18. *CYPERUS LANCASTRIENSIS* Porter. M. p. 165. Dry fields. Summer.
Philadelphia—Near Bartram's Garden (He.). *Bucks*—Tullytown (Fr.).
Lancaster—McCall's Ferry (Cr.), York Furnace (Ke.), Safe Harbor (P.).
Camden—Centerville (C.). *Gloucester*—Swedesboro (Li.). *Mercer*—Trenton (C.).
19. *CYPERUS CYLINDRICUS* (Ell.) Britton. M. p. 165. Sandy pine barrens. Summer.
Burlington—Woodmansie (Sa.). *Camden*—Lindenwold, Lucaston (VP.). *Cape May*—Anglesea (He.) (Li.). *Ocean*—Forked River (Cr.).
New Castle—Townsend, Canby and Commons.
20. *CYPERUS OVULARIS* (Michx.) Torr. M. p. 165. Sandy dry soil. Summer.
Philadelphia—Navy Yard (Fu.), Wissahickon (VP.). *Bucks*—Tullytown (Fr.). *Delaware*—Tinicum (B. Sm.), Crum Creek at Swarthmore (St.). *Lancaster*—Mouth of Tucquan Creek, Safe Harbor (P.).
Gloucester—Swedesboro (Li.). *Cape May*—Cape May (Li.) (Sa.) (Te.). *Atlantic*—Atlantic City, Dr. Geo. Smith (Fu.), Hammonton, Dr. J. B. Brinton (He.). *Ocean*—Forked River (Cr.).
New Castle—General and frequent.
21. *CYPERUS FILICULMIS* Vahl. M. p. 165. Dry sterile soil. Summer.
Philadelphia—Byberry, Mart. (B. C.). *Bucks*—Point Pleasant (Fr.), New Hope, Malta Island (Ws.). *Delaware*—Valley of Darby Creek (B. Sm.). *Chester*—West Chester (Pr.). *Lancaster*—(P.). *Lehigh*—Laury's (Kr.). *Northampton*—Easton, Porter (B. C.).

New Jersey—Common.

New Castle—Dixon's, etc. Frequent.

22. *CYPERUS GRAYI* Torr. M. p. 166. Barren sands near the coast. Summer.

New Jersey—Common.

New Castle—Collins, Summit Bridge, Commons.

23. *CYPERUS ECHINATUS* (Ell.) Wood. M. p. 166. Dry soil. Summer.
Philadelphia—Ballast below Navy Yard, Porter (He.), Bartram's Garden (P.).

2. *DULICHIMUM* L. C. Richard.

1. *DULICHIMUM ARUNDINACEUM* (L.) Britton. M. p. 167. Wet places. Summer.

3. *ELEOCHARIS* R. Br. SPIKE-RUSH.

Spikelet scarcely or not at all thicker than the culm.

Culm stout; spikelet many-flowered.

Culm terete, nodose.

Culm quadrangular, continuous.

Culm slender, triangular, continuous; spikelets few-flowered, subulate.

1. *E. interstincta*.

2. *E. mutata*.

3. *E. Robbinsii*.

Spikelet manifestly thicker than the culm.

Style mostly 2-cleft; achene lenticular or biconvex.

Upper sheath scarious, hyaline; plants perennial by slender rootstocks.

4. *E. olivacea*.

Upper sheath truncate, oblique, or toothed, not scarious.

Annual, with fibrous roots.

Spikelet ovoid or oblong; tubercle deltoid, acute.

5. *E. ovata*.

Spikelet oblong-cylindric; tubercle broad, low.

6. *E. Engelmanni*.

Perennial by horizontal rootstocks.

Tubercle flat-conic.

Scape and spike stout.

7. *E. palustris*.

Scape and spike slender.

8. *E. glaucescens*.

Tubercle swollen, bulb-like; spikelet not thicker than the scape.

9. *E. Smallii*.

Style 3-cleft; achene 3-angled or turgid.

Achene reticulated or cancellate.

Spikelet compressed; culm filiform.

10. *E. acicularis*.

Spikelet terete; culm slender.

11. *E. tuberculosa*.

Achene smooth or papillose.

Achene smooth, white; culms capillary.

12. *E. microcarpa*.

Achene papillose, brown, black, or yellow.

Tubercle depressed or short-conic.

Achene 3-ribbed on the angles.

13. *E. tricostrata*.

Achene obtuse-angled, not ribbed.

Culm filiform; scales obtuse.

14. *E. tenuis*.

Culm flat; scales acute.

15. *E. acuminata*.

Tubercle subulate or narrowly pyramidal.

Culms filiform, wiry, densely tufted, 1-2.5 dm. long.

16. *E. intermedia*.

Culms flattened, slender, 3-6 dm. long.

17. *E. rostellata*.

1. *ELEOCHARIS INTERSTINCTA* (Vahl.) R. & S. M. p. 168. Shallow water. Summer.

Gloucester—Repaupo (He.).

2. *ELEOCHARIS MUTATA* (L.) R. & S. M. p. 168. Shallow water. Summer.
Philadelphia—Gray's Ferry, C. E. Smith (Fu.). Cape May—Johnston's Pond, Dennisville (C.), Cape May (He.).
New Castle—Townsend, Canby and Commons.
3. *ELEOCHARIS ROBBINSII* Oakes. M. p. 168. Shallow water. Late summer.
Burlington—Quaker Bridge (C.). Camden—Longcoming (C.). Cape May—Dennisville, E. Dittenbaugh (B. C.). Ocean—Forked River.
4. *ELEOCHARIS OLIVACEA* Torr. M. p. 168. Wet soil. Late summer.
Burlington—Atsion (He.) (Wa.). Gloucester—Near Mickleton (He.), Swedesboro (Li.). Middlesex—South Amboy (C.).
New Castle—Cedar Swamp, Commons.
5. *ELEOCHARIS OBTUSA* Schult. M. p. 1044. Wet soil. Summer.
6. *ELEOCHARIS ENGELMANNI* Steud. M. p. 169. Wet soil. Summer.
Bucks—Sellersville, Perkasio (Fr.). Delaware—Tinicum (P.). Lancaster—(P.).
Camden—Kaighn's Point (C.). Hunterdon—Kingwood (C.).
7. *ELEOCHARIS PALUSTRIS* (L.) R. & S. M. p. 169. In water or wet grassy grounds. Summer.
Philadelphia—Byberry, Mart. (B. C.), Philadelphia (Wn.). Bucks—Near Sellersville (Fr.). Delaware—Ridley Creek above Media (B. Sm.). Chester—(P.). Lancaster—(P.). Dauphin—Steelton (Wn.).
Gloucester—Common (He.). Monmouth—Deal, A. H. Smith (Fu.).
New Castle—Frequent.
8. *ELEOCHARIS GLAUDESCENS* (Willd.) Schult. M. p. 169. Wet places. Summer.
Bucks—Sellersville (Fr.). Lancaster—(P.). Northampton—(P.).
9. *ELEOCHARIS SMALLII* Britton. M. p. 1055, 2d edition. Sandy shores of islands. Summer.
Lancaster—McCall's Ferry (P.). Dauphin—Harrisburg (P.).
10. *ELEOCHARIS ACICULARIS* (L.) R. & S. M. p. 170. Muddy shores. Summer.
Philadelphia—Byberry, Mart. (B. C.). Bucks—Near Sellersville (Fr.). Delaware—Haverford (Le.), Rhoads' Mill, Aston (B. Sm.). Chester—(P.). Lancaster—York Furnace (Ke.). Berks—(P.). Lehigh—Laury's (Kr.). Northampton—(P.).
New Jersey—Common.
New Castle—Brandywine, Col. Davis; Brakely.
11. *ELEOCHARIS TUBERCULOSA* (Michx.) R. & S. M. p. 170. Wet pine barrens. Summer.
Montgomery—Near Willow Grove (Sa.).
New Jersey—Frequent.
12. *ELEOCHARIS MICROCARPA* Torr. M. p. 170. Wet pine barrens. Summer.
Burlington—Quaker Bridge (C.). Atlantic—Egg Harbor (Li.). Ocean—Forked River (He.).
13. *ELEOCHARIS TRICOSTATA* Torr. M. p. 171. Wet soil. Summer.
Delaware—Tinicum (Fu.).
Burlington—Quaker Bridge (C.). Atlantic—Egg Harbor (He.) (Li.).

14. *ELEOCHARIS TENUIS* (Willd.) Schultes. M. p. 171. Wet soil. Early summer.
15. *ELEOCHARIS ACUMINATA* (Muhl.) Nees. M. p. 171. Wet soil. Summer. Bucks—Sellersville (Fr.).
16. *ELEOCHARIS INTERMEDIA* (Muhl.) Schultes. M. p. 171. Marshes. Summer. Philadelphia—(P.). Bucks—Point Pleasant, Moyer (P.). Lancaster—(P.). Northampton—(P.). Ocean—Forked River (He.). Hunterdon—Bull's Island, Mart. (B. C.).
17. *ELEOCHARIS ROSTELLATA* Torr. M. p. 171. Marshes. Summer. Cape May—Dennisville, E. Diffenbaugh (B. C.), Cape May (Ha.) (He.). Atlantic—Atlantic City (C.). New Castle—Collins Beach.

4. STENOPHYLLUS Raf.

1. *STENOPHYLLUS CAPILLARIS* (L.) Britton. M. p. 173. Sandy fields. Summer.

5. FIMBRISTYLIS Vahl.

Style 2-cleft; achene lenticular or biconvex.

Culms 2-9 dm. tall; spikelets umbellate; style mostly pubescent.

Perennial; leaves involute.

Annual; roots fibrous; leaves flat.

Culms 2-10 cm. tall; very slender; spikelets capitate; style glabrous below.

Style 3-cleft; achenes 3-angled.

1. *FIMBRISTYLIS CASTANEA* (Michx.) Vahl. M. p. 174. Salt marshes. Summer. New Jersey—Frequent. New Castle—Near tide-water. Scarce.
2. *FIMBRISTYLIS LAXA* Vahl. M. p. 174. Low ground. Summer. Philadelphia—(P.). Delaware—Mineral Hill (He.). Chester—Willistown (VP.). Lancaster—(P.). New Castle—Serpentine, Dixon's, Commons.
3. *FIMBRISTYLIS VAHLII* (Lam.) Link. M. p. 174. In moist soil. Summer. Philadelphia—(P.). Chester—(P.). Lancaster—(P.).
4. *FIMBRISTYLIS AUTUMNALIS* (L.) R. & S. M. p. 174. Low grounds. Summer.

6. SCIRPUS L. CLUB-RUSH or BULRUSH.

Spikelet solitary, terminal, bractless or subtended by a single bract or short leaf.

No involucre bract.

Involucre bract present, erect.

Bract shorter than, or but little longer than the spikelets; plant not aquatic.

Bract at least twice as long as the spikelet; plant aquatic.

Spikelets normally more than 1, usually several or numerous, often appearing lateral; involucre bract only 1.

Spikelets few, 1-12, appearing lateral.

Culms not sharply 3-angled; achene plano-convex; annuals.

- Bristles downwardly barbed, about equalling the achene. 4. *S. debilis*.
 Bristles minute or wanting. 5. *S. Smithii*.
 Culms sharply 3-angled; plants perennial by rootstocks.
 Achene plano-convex, bristles shorter than or equalling the achene.
 Spikelets acute, much overtopped by the slender involucre leaf; scales awned. 6. *S. Americanus*.
 Spikelets obtuse; involucre leaf short, stout; scales mucronulate. 7. *S. Olneyi*.
 Achene 3-angled, ridged on the back. 8. *S. mucronatus*.
 Spikelets several or numerous, umbelled; tall sedges. 9. *S. lacustris*.
 Spikelets several, capitate or umbellate, large; involucre leaves 2 or more. Achene lenticular or plano-convex; spikelets capitate. 10. *S. robustus*.
 Achene sharply 3-angled; spikelets umbellate. 11. *S. fluviatilis*.
 Spikelets very numerous in compound umbels or umbelled heads, small; involucre leaves several; tall sedges.
 Bristles downwardly barbed; spikelets in umbelled heads.
 Bristles equalling or slightly exceeding the achene; leaves 6-16 mm. wide.
 Style 3-cleft; achene 3-angled; bristles 6.
 Spikelets 3-8 in each head; bristles barbed throughout; scales obtuse. 12. *S. sylvaticus*.
 Spikelets 8-20 in each head; bristles not barbed below; scales acute. 13. *S. atrovirens*.
 Style 2-cleft; achene plano-convex; bristles 4. 14. *S. microcarpus*.
 Bristles flexuous, twice as long as the achene; leaves 4-6 mm. wide. 15. *S. polyphyllus*.
 Bristles smooth or slightly pubescent; umbel mostly decompound. 16. *S. cyperinus*.
1. *SCIRPUS NANUS* Spreng. M. p. 176. Brackish marshes. Summer.
New Jersey—Frequent.
 2. *SCIRPUS PLANIFOLIUS* Muhl. M. p. 176. Woods and thickets. Summer.
Philadelphia—Byberry, Mart. (B. C.), Old York Road (Te.), Wissahickon (VP.). *Bucks*—Rock Hill (Fr.). *Montgomery*—Green Lane (VP.). *Delaware*—Ithan's Bridge, Dr. Geo. Smith (Fu.) (B. Sm.), Radnor, Castle Rock (VP.). *Chester*—(P.). *Lancaster*—Lancaster (Kr.). *Berks*—(P.). *Northampton*—Easton, Porter (B. C.).
Gloucester—Mullica Hill (C.), Mickleton (He.), Swedesboro (Li.).
Mercer—Princeton (C.).
New Castle—General and frequent.
 3. *SCIRPUS SUBTERMINALIS* Torr. M. p. 176. Slow streams and ponds. Summer.
Burlington—Batsto, Quaker Bridge (C.), Brown Mills, West Creek (Te.). *Camden*—Longacoming (C.), near Cedar Brook (VP.). *Gloucester*—Swedesboro, Repaupo (Li.). *Atlantic*—Hammonton (Fr.), Mill Pond near Atlantic City (He.), Bakersville (Li.). *Ocean*—Toms River (C.), Forked River (He.).
 4. *SCIRPUS DEBILIS* Pursh. M. p. 177. Swamps. Summer.
Philadelphia—Byberry, Mart. (B. C.). *Bucks*—Rock Hill (Fr.). *Montgomery*—(P.). *Delaware*—Rhoads' Swamp (Fu.), Ridley Creek near Media (B. Sm.). *Chester*—(P.). *Lancaster*—(P.). *Lehigh*—(P.). *Northampton*—Easton, Porter (B. C.).

- Salem*—Daretown, *C. Woolman* (He.). *Hunterdon*—Pittstown (C.).
New Castle—Frequent.
5. *SCIRPUS SMITHII* A. Gray. M. p. 177. Wet shores. Summer.
Philadelphia—Penrose Ferry, *C. E. Smith* (Fu.).
Camden—Gloucester (C.), tidal mud above Cooper's, *I. Burk* (He.).
Cape May—Sea Isle (Li.).
New Castle—Delaware Bay.
6. *SCIRPUS AMERICANUS* Pers. M. p. 177. Fresh water and brackish swamps. Summer.
7. *SCIRPUS OLNEYI* A. Gray. M. p. 177. Salt marshes. Summer.
Cape May—Dennisville, *E. Diffenbaugh* (B. C.). *Ocean*—Forked River (Br.), Toms River (C.). *Monmouth*—Squan Village (C.).
New Castle—River shore near Light-house, *Canby*.
8. *SCIRPUS MUCRONATUS* L. M. p. 178. Swamps. Summer.
Delaware—Rhoads' Swamp (B. Sm.). *Chester*—(P.).
9. *SCIRPUS LACUSTRIS* L. M. p. 178. In still, fresh water. Summer.
Philadelphia—Byberry, *Mart.* (B. C.). *Bucks*—Near Sellersville (Fr.).
Delaware—Upper Darby, *Dr. Geo. Smith* (Fu.), Wawa (U. C. S.). *Lancaster*—(P.). *Lehigh*—Laury's (Kr.). *Northampton*—Easton, *Porter* B. C.). *Dauphin*—(P.).
New Jersey—Frequent.
New Castle—Frequent.
10. *SCIRPUS ROBUSTUS* Pursh. M. p. 179. Salt marshes. Summer.
Philadelphia—Neck (VP.).
New Jersey—Frequent.
New Castle—Christiana Creek, *B. Hoopes*; Delaware City.
11. *SCIRPUS FLUVIATILIS* (Torr.) A. Gray. M. p. 179. Shallow water. Summer.
Delaware—Near Chester, *Dr. Jesse Young* (Fu.), Tinicum (P.), Essington (Sa.). *Lancaster*—Peach Bottom (P.).
Camden—Swampy borders of Delaware (C.). *Gloucester*—Near Mickleton (He.), Swedesboro (Li.). *Salem*—Swampy borders of Delaware (C.), Oldman Creek (He.).
New Castle—Wilmington, marshes, *Michener*.
12. *SCIRPUS SYLVATICUS* L. M. p. 179. Swamps. Summer.
Philadelphia—Byberry, *Mart.* (B. C.). *Bucks*—Durham, *Ruth* (Fr.).
Delaware—Between Darby and Chester, *Dr. Geo. Smith* (Fu.). *Lancaster*—Smithville, Gap, Little Octoraro (P.).
Hunterdon—Stockton, Lambertville (C.).
New Castle—Faulkland, *Commons*.
13. *SCIRPUS ATROVIRENS* Muhl. M. p. 179. Swamps. Summer.
Philadelphia—Byberry, *Mart.* (B. C.). *Bucks*—Rock Hill (Fr.). *Delaware*—Radnor, *Dr. Geo. Smith* (Fu.), near Newtown Square (VP.).
Lancaster—(P.). *Northampton*—(P.).
Burlington—Brown Mills (Te.). *Gloucester*—Mickleton (He.), Swedesboro (Li.), Wolferth's Station (C.). *Monmouth*—Freehold (C.).
New Castle—Frequent.

14. *SCIRPUS MICROCARPUS* Presl. M. p. 179. Swamps and wet woods. Summer.

Bucks—Penn Valley (Fr.).

15. *SCIRPUS POLYPHYLLUS* Vahl. M. p. 180. Swamps. Summer.

Bucks—Near Sellersville (Fr.). *Delaware*—Valley of Darby Creek (B. Sm.). *Chester*—(P.). *Lancaster*—(P.). *Berks*—Hamburg (Ke.). *Dauphin*—(P.).

Hunterdon—Rosemont, Lambertville (C.).

New Castle—Common.

16. *SCIRPUS CYPERINUS* (L.) Kunth. M. p. 180. Swamps. Summer.

7. *ERIOPHORUM* L. COTTON-GRASS.

Achene obovoid, obtuse; spikelets umbellate. 1. *E. polystachyon*.

Achene linear-oblong, acute; spikelets capitate or some of them peduncled. Leaves channeled or 3-sided; bristles 4-6 times as long as the scale, bright white. 2. *E. gracile*.

Leaves flat; bristles 3 times as long as the scale, brown (rarely white). 3. *E. Virginicum*.

1. *ERIOPHORUM POLYSTACHYON* L. M. p. 182. Bogs. Summer.

New Castle—Thompsons, not common.

2. *ERIOPHORUM GRACILE* Koch. M. p. 182. Bogs. Summer.

Bucks—Quakertown, *Mart.* (B. C.), *Nockamixon* (Cr.) (He.), *Rock Hill* (Fr.). *Delaware*—Rhoads' Swamp, *Marple* (Fu.) (B. Sm.). *Ches-ter*—(P.). *Lehigh*—Salsburg (Kr.). *Northampton*—(P.).

Gloucester—Mickleton (He.). *Ocean*—Tuckerton (Sta.) (Te.).

New Castle—Delaware Junction, Townsend, *Commons*.

3. *ERIOPHORUM VIRGINICUM* L. M. p. 182. Bogs. Summer.

8. *FUIRENA* Rottb. UMBRELLA-GRASS.

1. *FUIRENA SQUARROSA* Michx. M. p. 182. Wet meadows and marshes near the coast. Summer.

- 1a. *FUIRENA SQUARROSA HISPIDA* (Ell.) Chapm. M. p. 182. Sandy, wet places. Summer.

Camden—Ballast and Petty's Island (C.). *Cape May*—Cape May (Cr.) (Li.), *Beesley's Point* (He.), *Anglesea* (Li.). *Atlantic*—May's Landing (C.). *Ocean*—Toms River (C.), *Forked River* (He.) (Wn.). *Monmouth*—Long Branch (Fu.), *Ocean Beach*, *Ocean Grove*, *Spring Lake* (C.).

9. *RYNCHOSPORA* Vahl.

Style entire or 2-toothed, persistent as a long-exserted beak.

1. *R. corniculata*.

Style deeply 2-cleft, only its base persistent as a tubercle.

Bristles minute or wanting.

2. *R. pallida*.

Bristles downwardly barbed or rarely smooth.

Scales white or nearly so; bristles 9-15.

3. *R. alba*.

Scales brown; bristles 6.

Leaves filiform; achene oblong.

4. *R. capillacea*.

Leaves narrowly linear, flat; achene obovate.

Bristles equalling the achene; tubercle one-half as long or less.

5. *R. Krieskernii*.

Bristles reaching or exceeding the end of the tubercle, which is as long as the achene.

- Spikelets few-several in numerous, rather loose clusters.
 Spikelets very numerous in 2-6 very dense, globose heads.
 Bristles upwardly barbed.
 Spikelets very numerous in 2-6 very dense, globose heads.
 Spikelets few-several in rather loose clusters.
 Achene smooth.
 Leaves setaceous; achene obovate, shining.
 Leaves narrowly linear, flat; achene broadly oval, dull.
 Achene transversely wrinkled.
 Leaves flat; spikelets nearly or quite sessile.
 Leaves involute; spikelets distinctly pedicelled.
6. *E. glomerata*.
 7. *E. axillaris*.
 7. *E. axillaris*.
 8. *E. fusca*.
 9. *E. gracilentia*.
 10. *E. cymosa*.
 11. *E. Torreyana*.
1. RYNCHOSPORA CORNICULATA (Lam.) A. Gray. M. p. 184. Wet places. Summer.
 Gloucester—Center Square (He.).
 - 1a. RYNCHOSPORA CORNICULATA MACROSTACHYA (Torr.) Britton. M. p. 184. Swamps. Summer.
 Camden—Berlin, Jos. Leidy (Fu.), Longacoming, Gloucester (C.).
 Gloucester—Near Mickleton (He.), Swedesboro (Li.). Salem—Penn's Grove (C.). Ocean—Beaver Dam, Manchester (C.).
 2. RYNCHOSPORA PALLIDA M. A. Curtis. M. p. 184. Bogs in pine barrens. Summer.
 Burlington—Atsion, E. Diffenbaugh (B. C.), Bordentown, Batsto, Shamong, Quaker Bridge (C.). Camden—Merchantville (C.). Gloucester—Woodbury (C.). Atlantic—Egg Harbor (Ke.) (Li.). Ocean—Toms River, Dr. Geo. Smith (Fu.), Forked River (He.) (Wn.).
 3. RYNCHOSPORA ALBA (L.) Vahl. M. p. 185. Bogs. Summer.
 4. RYNCHOSPORA CAPILLACEA Torr. M. p. 185. Bogs. Summer.
 Lancaster—Dillerville, Porter (Fu.).
 5. RYNCHOSPORA KNIESKERNII Carey. M. p. 185. Pine barrens. Summer.
 Burlington—Iron-ore banks below Atsion, E. Diffenbaugh (B. C.), Quaker Bridge (C.). Atlantic—Egg Harbor (He.) (Li.). Ocean—Paint Hollow, Cassville (C.). Monmouth—Shark River, Hope Village (C.).
 6. RYNCHOSPORA GLOMERATA (L.) Vahl. M. p. 185. Low grounds. Summer.
 Philadelphia—Byberry, Mart. (B. C.). Bucks—Rock Hill (Fr.), Bristol (P.). Montgomery—(P.). Delaware—Valley of Darby Creek (B. Sm.), Tinicum (VP.). Lancaster—(P.). Chester—Lincoln University, Porter (B. C.). Lehigh—Laury's (Kr.).
 New Jersey—Frequent.
 New Castle—Thompsons; not common.
 7. RYNCHOSPORA AXILLARIS (Lam.) Britton. M. p. 185. Swamps. Summer.
 Burlington—Quaker Bridge, E. Diffenbaugh (B. C.), Atsion (C.). Atlantic—Hammonton (C.). Ocean—Manchester (C.).

8. *RYNCHOSPORA FUSCA* (L.) R. & S. M. p. 185. Low grounds. Summer.
Burlington—Quaker Bridge (C.). *Camden*—Spring Garden (C.).
Gloucester—Mickleton (C.). *Atlantic*—Egg Harbor (He.). *Ocean*—
Manchester (C.), *Forked River* (He.).
9. *RYNCHOSPORA GRACILENTA* A. Gray. M. p. 186. Pine-barren swamps.
 Summer.
Burlington—Quaker Bridge (C.), *Atsion* (He.). *Gloucester*—Mickle-
 ton (C.). *Atlantic*—Egg Harbor (Li.).
New Castle—*Kiamensi*.
10. *RYNCHOSPORA CYMOSA* Ell. M. p. 186. Low grounds. Summer.
Bucks—Bristol (P.), *Tullytown* (Sa.). *Delaware*—Spring House, Tin-
 icum, *A. H. Smith* (Fu.) (B. Sm.). *Lancaster*—(P.).
Camden—Griffith's Swamp (C.), *Lindenwold* (VP.). *Gloucester*—Near
 Mickleton (He.). *Monmouth*—Woodbury Pond, *Squan* (C.). *Mercer*—
 Princeton, *Hightstown* (C.). *Hunterdon*—Byram (C.).
New Castle—Common.
11. *RYNCHOSPORA TORREYANA* A. Gray. M. p. 186. Wet pine barrens.
 Summer.
Burlington—Quaker Bridge, *Atsion* (C.). *Atlantic*—Pleasant Mills,
 Main Road Station (C.), *Egg Harbor* (He.) (Li.) (Wn.).

10. *CLADIUM* P. Br. TWIG-RUSH.

1. *CLADIUM MARISCOIDES* (Muhl.) Torr. M. p. 186. Marshes. Summer.
Lancaster—(P.).
New Jersey—Frequent.

11. *SCLERIA* Berg. NUT-RUSH.

Spikelets in terminal, or terminal and lateral clusters; achene supported on
 a hypogynium.

Achene smooth.

1. *S. triglomerata*.

Achene reticulated or irregularly rugose.

Culms erect or ascending; achene reticulated; leaves 2-3 mm. wide.

2. *S. reticularis*.

Culms spreading; achene irregularly rugose; leaves 4-8 mm. wide.

3. *S. Torreyana*.

Achene papillose.

4. *S. pauciflora*.

Spikelets interruptedly glomerate-spicate; no hypogynium.

5. *S. verticillata*.

1. *SCLERIA TRIGLOMERATA* Michx. M. p. 186. Meadows and thickets. Sum-
 mer.

Bucks—Nockamixon (Fr.). *Delaware*—Near Spring House, Tinicum,
Dr. Geo. Smith (Fu.). *Chester*—(P.). *Lancaster*—(P.).

New Jersey—Frequent.

New Castle—Frequent.

2. *SCLERIA RETICULARIS* Michx. M. p. 188. Moist meadows. Summer.

Delaware—Near Spring House, Tinicum, *Dr. Geo. Smith* (Fu.). *Lan-*
caster—Pleasant Grove (P.).

Atlantic—Main Road Station (C.). *Ocean*—Manchester (C.).

New Castle—Newark, not common.

- 2a. *SCLERIA RETICULARIS PUBESCENS* Britton. M. p. 187. Moist meadows. Summer.
Bucks—Tullytown (Sa.).
Gloucester—Near Mickleton (He.).
- 2b. *SCLERIA RETICULARIS OBSCURA* Britton. M. p. 188. Moist meadows. Summer.
Ocean—Forked River (He.).
3. *SCLERIA TORREYANA* Walp. M. p. 188. Moist soil. Summer.
Bucks—Tullytown (Fr.). *Montgomery*—Willow Grove (VP.). *Delaware*—Tinicum (Fu.). *Lancaster*—(P.).
Burlington—Batsto (C.). *Ocean*—Paint Hollow, Toms River (C.).
4. *SCLERIA PAUCIFLORA* Muhl. M. p. 188. Dry soil. Summer.
Bucks—Durham, *Ruth* (Fr.). *Montgomery*—(P.). *Delaware*—Williamson School, Dr. J. B. Brinton (B. C.), Miss Phillips Barrens, Dr. Geo. Smith (Fu.). *Chester*—(P.). *Lancaster*—(P.). *Northampton*—(P.).
Gloucester—Near Mickleton (He.). *Atlantic*—Landisville, Buena Vista (C.). *Monmouth*—Shark River (C.).
New Castle—Dixons, Commons; Townsend, Canby and Tatnall; Faulkland, Commons.
5. *SCLERIA VERTICILLATA* Muhl. M. p. 188. Moist meadows. Summer.
Lancaster—Dillerville, *Porter* (Fu.).

12. CAREX L. SEDGE.

- A. Staminate flowers numerous, in one or more terminal spikes, which are sometimes pistillate at the base or summit; or the spike solitary and the staminate flowers uppermost or basal, rarely diœcious; stigmas mostly three and the achene 3-angled or swollen (stigmas 2 and the achene lenticular or compressed in No. 32). EUCAREX:

Perigynia mostly long-beaked, 3-20 mm. long, often inflated, the beak usually as long as the body or longer (short-beaked in No. 20); pistillate spikes mostly large, globose, ovoid, oblong or cylindric.

Perigynia membranous or papery.

Perigynia ovoid, conic, each with a narrowed base, or subulate, tapering into a beak.

Teeth of the perigynium-beak slender, short or none, neither stiff nor awned.

Teeth of the perigynium-beak lanceolate or subulate.

1. *Lupulinae*.

Teeth of the perigynium-beak short or almost wanting.

2. *Vesicariae*.

Teeth of the perigynium-beak stiff, setaceous or awned.

3. *Pseudocyperinae*.

Perigynia obovoid, very abruptly contracted into a beak; spikes exceedingly dense.

4. *Squarrosae*.

Perigynia firm, hard, and leathery.

5. *Paludosae*.

Perigynia short-beaked or beakless, little or not at all inflated, 1-5 mm. long, the beak commonly not more than one-half as long as the body (long-beaked in No. 26); spikes small and oblong or globose, or elongated linear or narrowly cylindric.

* Spikes 2 or more, the staminate one always uppermost, sometimes partly pistillate.

Pistillate spike or spikes many-flowered, mostly 2-5 cm. long or more (or shorter in Nos. 27, 38, 40, 41, 44, 49-51) linear, narrowly cylindric or oblong.

Perigynia with a straight, short beak (long-beaked in No. 26; nearly beakless in No. 21), firm or leathery in texture; pistillate spikes erect; stigmas 3.

Uppermost spike staminate from the base to about the middle. 6. *Shortianae*.

Uppermost spike entirely staminate, or occasionally pistillate at the base.

Perigynia papillose; beak very short, nearly or quite entire. 7. *Anomala*.

Perigynia pubescent; beak sharply 2-toothed. 8. *Hirtae*.

Perigynia beakless or very short-beaked (see No. 21), and with orifices nearly or quite entire, thin in texture, not inflated, closely investing the achene; pistillate spikes erect or drooping, often brown or purple; stigmas often 2.

Pistillate spikes erect or somewhat spreading.

Terminal spike staminate below; stigmas 3.

9. *Atratae*.

Terminal spike staminate throughout; stigmas 2.

10. *Rigidae*.

Pistillate spikes drooping, mostly on slender peduncles.

Pistillate spikes 0.6-7.5 cm. long; stigmas 3 (2 in No. 32).

Pistillate spikes linear; scales shorter than the perigynia. 11. *Prasinae*.

Pistillate spikes globose, oblong or cylindric; scales as long as the perigynia, or longer.

12. *Pendulinae*.

Pistillate spikes 2.5-10 cm. long; scales 1-8 times as long as the perigynia. 13. *Cryptocarpae*.

Perigynia tapering to a distinct beak (nearly or quite beakless in Nos. 38-42), membranous in texture (firm in No. 48), inflated or loosely investing the achene; pistillate spikes mostly drooping, often narrowly linear.

Terminal spike staminate below, pistillate above; perigynia short-beaked or beakless.

Spikes all erect or nearly so. 14. *Virescentes*.

Pistillate spikes drooping or spreading (erect or little spreading in No. 43). 15. *Gracillimae*.

Terminal spike wholly staminate, or sometimes pistillate at the base.

Perigynia manifestly beaked, nerved or nerveless; pistillate spikes drooping.

Beak of the perigynium cylindric or subulate, once or twice as long as the body.

16. *Sylvaticae*.

Beak of the perigynium not more than as long as the body. 17. *Debiles*.

Perigynia beakless or minutely beaked, finely many-striate; spikes erect or nearly so.

18. *Griseae*.

Pistillate spikes small, few-many-flowered, mostly 6-25 mm. long (sometimes longer in No. 58). (See also Nos. 27, 38, 40, 41, 44, 49-51).

Perigynia glabrous.

Pistillate spikes many-flowered, 6-25 mm. long, usually dense.

Pistillate spikes scattered, distant, long-stalked, or the two upper ones approximate and nearly sessile.

19. *Granulares*.

Pistillate spikes approximate and nearly sessile at the

- top of the scape, or the lowest distant and stalked.
- Perigynium with a stout 2-toothed beak; plants with glabrous foliage. 20. *Extensae*.
- Perigynium with a short entire beak or beakless; plants with pubescent foliage. 21. *Pallescentes*.
- Pistillate spikes few-several-flowered, often loose.
- Leaf-blades 2-36 mm. wide; bracts leaf-like, usually large.
- Perigynia finely many-striate. 22. *Oligocarpae*.
- Perigynia with few or many, mostly strong nerves. 23. *Laxiflorae*.
- Leaf-blades and stems mostly capillary; bracts mere bladeless sheaths. 24. *Digitatae*.
- Perigynia pubescent.
- Bracts mainly reduced to purple, bladeless sheaths. 25. *Pedunculatae*.
- Bracts various, not sheathing.
- Perigynia mostly rounded. 26. *Montanae*.
- Perigynia conspicuously 3-angled. 27. *Triquetrae*.
- ** Spike solitary, sometimes dioecious.
- Scales of the spikes elongated, leaf-like. 28. *Phyllostachyae*.
- Scales of the spikes short, normal. 29. *Leptocephalae*.
- B. Staminate flowers few, at the summits or bases of the always sessile spikes or sometimes forming whole spikes, or variously intermixed with the pistillate; stigmas always 2; achene lenticular, compressed, ellipsoid or plano-convex. VIGNEA.
- Staminate flowers at the summit of the spike.
- Spike solitary, terminal. 30. *Dioicae*.
- Spikes several, clustered.
- Spikes yellowish or brown at maturity, in compound or panicle clusters.
- Perigynia strongly several-nerved, especially on the outer face. 31. *Vulpinae*.
- Perigynia nerveless or faintly nerved. 32. *Multiflorae*.
- Spikes green or greenish when mature, aggregated or separated, in simple clusters. 33. *Muhlenbergianae*.
- Staminate flowers at the base of the spike, variously intermingled with the pistillate in the spikes, or occasionally forming whole spikes.
- Perigynia wingless, the inner face flat. 34. *Elongatae*.
- Perigynia with narrow or broad marginal wings, the inner face concave. 35. *Ovales*.

1. LUPULINAE.

- Pistillate-spikes ovoid or globose, few-many-flowered.
- Perigynia subulate, reflexed when mature. 1. *C. Collinsii*.
- Perigynia conic, or ovoid, not reflexed.
- Plants yellow or yellowish; perigynia little inflated. 2. *C. folliculata*.
- Plants green; perigynia much inflated; staminate spike stalked.
- Leaves 4-6 mm. wide; heads loosely flowered. 3. *C. intumescens*.
- Leaves 6-10 mm. wide; heads globose, dense. 4. *C. Asa-Grayi*.
- Pistillate spikes oblong or cylindric, densely many-flowered.
- Pistillate spikes oblong; achene longer than thick. 5. *C. lupulina*.

Pistillate spikes cylindric; achene not longer than thick.

Perigynia yellowish, tapering into a beak twice as long as the body. 6. *C. lupuliformis*.

Perigynia greenish-brown, abruptly narrowed into a beak 2-3 times as long as the body. 7. *C. grandis*.

2. VESICARIAE.

Scales acute, acuminate or smooth-awned, or the lower slightly roughened.

Perigynia ascending or spreading, not reflexed.

Spikes narrowly cylindric, 2-15 cm. long, 6-8 mm. thick.

Leaves 4-12 mm. wide; culm stout. 8. *C. utriculata*.

Leaves 2-5 mm. wide; culm slender. 9. *C. monile*.

Spikes cylindric or oblong-cylindric, 2-5 cm. long, 12 mm. thick.

10. *C. bullata*.

Perigynia, at least the lower ones, reflexed at maturity.

11. *C. retrorsa*.

Scales tapering into rough awns, or subulate and scabrous.

12. *C. lurida*.

3. PSEUDOCYPERINAE.

Spikes all erect or ascending.

13. *C. Schweinitzii*.

Spikes, at least the lower ones, slender-stalked and drooping.

Pistillate spikes oblong-cylindric, 1-5 cm. long; perigynia reflexed.

14. *C. hystrioides*.

Pistillate spikes narrowly cylindric, 2.5-6 cm. long; perigynia reflexed.

15. *C. comosa*.

4. SQUARROSAE.

Scales linear-subulate, longer than the perigynia. 16. *C. Frankii*.

Scales lanceolate, about one-half as long as the perigynia.

17. *C. squarrosa*.

5. PALUDOSAE.

Leaves bright green, not glaucous; teeth of the perigynium-beak slender, conspicuous. 18. *C. trichocarpa*.

Leaves pale green, glaucous; teeth of the perigynium-beak short.

19. *C. riparia*.

6. SHORTIANAE.

20. *C. Shortiana*.

7. ANOMALAE.

21. *C. scabrata*.

8. HIRTAE.

Staminate spike or spikes sessile or nearly so. 22. *C. vestita*.

Staminate spike or spikes distinctly stalked.

Leaves glabrous; native species.

Leaves flat or their margins slightly revolute.

Scales only half as long as the perigynia.

23. *C. Walteriana*.

Scales equalling or but slightly shorter than the perigynia.

24. *C. lanuginosa*.

Leaves strongly involute, 2 mm. wide or less.

25. *C. filiformis*.

Leaves or their sheaths pubescent; beak long. 26. *C. hirta*.

9. ATRATAE.

27. *C. fusca*.

CYPERACEAE.

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10. RIGIDAE.

Lower sheaths becoming very fibrillose; tufted bog species.

28. *C. stricta*.

Lower sheaths not at all fibrillose, or slightly so.

Culms 0.3-0.6 m. tall; scales acute or acuminate. 29. *C. Haydeni*.

Culms 0.2-1.1 m. tall; scales obtuse or the lower acute.

Scales green.

30. *C. aquatilis*.

Scales purple or brown.

31. *C. Goodenovi*.

11. PRASINAE.

Perigynia twisted toward the top; scales purple-brown.

32. *C. torta*.

Perigynia straight; scales green.

33. *C. prasina*.

12. PENDULINAE.

Pistillate spikes narrowly cylindric.

34. *C. littoralis*.

Pistillate spikes oblong or globose.

35. *C. limosa*.

13. CRYPTOCARPAE.

Perigynia obovoid, obtuse.

36. *C. crinita*.

Perigynia oblong or elliptic, acute.

37. *C. gynandra*.

14. VIRESCENTES.

Perigynium densely pubescent.

Pistillate spikes oblong-cylindric, 8-20 mm. long; perigynia oval or ovoid, few-nerved. 38. *C. virescens*.

Pistillate spikes narrowly cylindric, 12-36 mm. long; perigynia oblong, strongly several-nerved. 39. *C. costellata*.

Perigynium nearly glabrous, at least when mature.

Spikes 5-7 mm. thick; perigynia imbricated, flattened; top of achene not bent. 40. *C. triceps*.

Spikes 4 mm. thick; perigynia not imbricated, swollen; top of achene bent, or tipped with a bent style. 41. *C. Caroliniana*.

15. GRACILLIMAE.

Perigynia 2-4 mm. long, slightly swollen; spikes linear or linear-cylindric.

Plants glabrous; perigynia obtuse.

42. *C. gracillima*.

Sheaths pubescent; perigynia pointed at both ends.

43. *C. aestivalis*.

Perigynia 4-5 mm. long, manifestly swollen; spikes oblong or oblong-cylindric.

44. *C. Davissi*.

16. SYLVATICAE.

45. *C. longirostris*.

17. DEBILES.

Perigynia membranous, few-nerved; pistillate spikes slender.

Leaves 5-10 mm. wide; scales two-thirds as long as the perigynia.

46. *C. arctata*.

Leaves 2-5 mm. wide; scales one-half as long as the perigynia.

47. *C. tenuis*.

Perigynia coriaceous, strongly many-nerved; pistillate spikes thicker.

48. *C. oblita*.

18. GRISEAE.

Leaves slightly glaucous or not at all.

Pistillate spikes dense, usually many-flowered; leaves 4-6 mm. wide, spreading, soft. 49. *C. grisea*.

Pistillate spikes loosely several-flowered; leaves 2-4 mm. wide, mostly erect and rigid. 50. *C. amphibola*.

Plant very glaucous all over.

51. *C. glaucoidea*.

19. GRANULABES.

Perigynia 2-3 mm. long.

52. *C. granularis*.

Perigynia 1-1.5 mm. long.

53. *C. Shriveri*.

20. EXTENSAE.

54. *C. flava*.

21. PALLESCENTES.

55. *C. pallescens*.

22. OLIGOCARPAE.

Sheaths glabrous.

Perigynia narrowed at both ends, beakless.

56. *C. conoidea*.

Perigynia with a short entire beak.

57. *C. oligocarpa*.

Sheaths pubescent.

58. *C. Hitchcockiana*.

23. LAXIFLORAE.

Plants not at all glaucous, or very slightly so.

Beak of the perigynium straight, slender.

59. *C. polymorpha*.

Beak of the perigynium bent, short or none.

Leaves mostly narrow, 2-12 mm. wide.

Scales, at least the upper, obtuse.

Bracts elongated; spikes loosely flowered; culms slender.

60. *C. tetanica*.

Bracts short; spikes densely flowered; culms stout.

61. *C. Meadii*.

Scales acute, cuspidate, acuminate, or awned.

Perigynia obtusely 3-angled.

Perigynia obovoid, 2.5-3 mm. long.

62. *C. laxiflora*.

Perigynia oblong, narrow, about 4 mm. long.

Perigynia narrowly oblong, 4-5 mm. long, the beak oblique.

63. *C. styloflexa*.

Perigynia elliptic, 3-4 mm. long, the beak nearly straight.

64. *C. striatula*.

Perigynia sharply 3-angled.

65. *C. digitalis*.

Leaves broad, 12-36 mm. wide.

Bracts leafy, the upper usually overtopping the spikes.

66. *C. Albursina*.

Bracts mostly reduced to purple, leafless sheaths.

67. *C. plantaginea*.

Plants distinctly glaucous.

Pistillate spikes drooping on hair-like stalks.

68. *C. laxiculmis*.

Pistillate spikes erect.

Basal leaves much longer than the culm.

69. *C. ptychocarpa*.

Basal leaves shorter than the culm or equalling it.

Leaves 12-25 mm. wide.

70. *C. platyphylla*.

Leaves 2-4 mm. wide.

71. *C. livida*.

24. DIGITATAE.

72. *C. setifolia*.

25. PEDUNCULATAE.

73. *C. pedunculata*.

26. MONTANAE.

Plant not stoloniferous.

74. *C. pedicellata*.

Plants stoloniferous, the stolons sometimes short.

Culms, or some of them, longer than the leaves.

Staminate spikes conspicuous, mostly over 6 mm. long.

Plant dark green; staminate spike very prominent; perigynia broadly oval.

75. *C. Pennsylvanica*.

Plant light green; staminate spike shorter; perigynia oblong.

76. *C. varia*.

Staminate spikes inconspicuous, mostly less than 6 mm. long.

77. *C. albicans*.

Culms, or most of them, much shorter than the leaves.

Scales light green with purple margins; perigynia oblong.

78. *C. nigromarginata*.

Scales green with lighter scarious margins; perigynia oval.

79. *C. umbellata*.

27. TRIQUETRAE.

80. *C. pubescens*.

28. PHYLLOSTACHYAE.

Body of the perigynium oblong, its beak flattened.

81. *C. Willdenovii*.

Body of the perigynium globose, its beak subulate.

82. *C. Jamesii*.

29. LEPTOCEPHALAE.

83. *C. leptalea*.

30. DIOICAE.

84. *C. exilis*.

31. VULPINAE.

Beak of the perigynium shorter than the body.

85. *C. conjuncta*.

Beak of the perigynium equalling or longer than the body.

86. *C. stipata*.

32. MULTIFLORAE.

Leaves 2 mm. wide or less.

Perigynia 3-5 mm. long.

87. *C. teretiuscula*.

Perigynia 2-3 mm. long.

88. *C. alopecoidea*.

Leaves 2-6 mm. wide.

Leaves as long as the culm or longer.

89. *C. vulpinoidea*.

Leaves shorter than the culm.

90. *C. xanthocarpa*.

33. MUHLENBERGIANAE.

Spikes separated or the upper close together; perigynia mostly radiating or reflexed.

Leaves 1-3 mm. wide.

Perigynia stellately radiating.

91. *C. rosea*.

Perigynia reflexed when mature.

92. *C. retroflexa*.

Leaves 5-9 mm. wide.

93. *C. sparganioides*.

Spikes all aggregated or the lower separated; perigynia spreading or ascending.

Leaf-blades relatively thin and lax, 4-8 mm. wide.

94. *C. cephaloidea*.

Leaf-blades relatively stiff, 1-4 mm. wide.

Perigynia 2 mm. long or less, nerveless or faintly few-nerved.

95. *C. cephalophora*.

Perigynia 3 mm. long, strongly-nerved.

96. *C. Muhlenbergii*.

34. ELONGATAE.

Perigynia radiately spreading, or reflexed when old.

Perigynia distinctly nerved on both faces, the beak rough.

Perigynia lanceolate; beak more than half as long as the body.

97. *C. sterilis*.

Perigynia ovate; beak about one-third as long as the body, abrupt.

98. *C. Atlantica*.

Perigynia faintly nerved on the outer face, nerveless or nearly so on the inner; beak smoothish.

99. *C. interior*.

Perigynia ascending, appressed or somewhat spreading when old, not radiating.

Perigynia ovate, oval, oblong or elliptic.

Bracts short, scale-like or none, the lowest occasionally longer than the spike.

Heads silvery green or nearly white. 100. *C. canescens*.

Heads brown or brownish. 101. *C. brunnescens*.

Bracts bristle-form, much elongated, much exceeding the 2-4 oblong nerved perigynia.

102. *C. triperma*.

Perigynia lanceolate or ovate-lanceolate.

103. *C. bromoides*.

35. OVALES.

Perigynia lanceolate or ovate-lanceolate, 2-5 times as long as wide.

Perigynia broadly winged; staminate flowers intermixed with the pistillate.

104. *C. stocata*.

Perigynia narrowly winged; staminate flowers all basal.

Spikes oblong or oval; perigynia ascending or erect.

Spikes green-brown, blunt. 105. *C. tribuloides*.

Spikes bright brown, pointed; perigynia lanceolate.

106. *C. scoparia*.

Spikes subglobose; perigynia spreading, at least when old.

107. *C. cristatella*.

Perigynia ovate, not more than twice as long as wide (longer in some forms of 110).

Perigynia narrowly winged above; heads greenish-brown.

108. *C. adusta*.

Perigynia broadly wing-margined.

Perigynia spreading or ascending.

Spikes silvery green. 109. *C. foenea*.

Spikes yellowish-brown or greenish. 110. *C. straminea*.

Perigynia erect or appressed.

Heads silvery green or nearly white; sea-beach species.

111. *C. silicea*.

Heads brown-green; meadow or marsh species.

112. *C. tenera*.

Perigynia orbicular, very broadly ovate or somewhat obovate, sometimes wider than long.

Heads green-brown.

Perigynia spreading or ascending; achene sessile.

113. *C. festuacea*.

Perigynia erect, 4-5 mm. broad; achene short-stalked.

114. *C. alata*.

Heads silvery green, yellowish or whitish.

115. *C. albulutescens*.

1. CAREX COLLINSII Nutt. M. p. 191. Bogs. Summer.

Chester—(P.).

Burlington — Stafford Forge (St.), Brown Mills (Te.). Camden — Griffith's Swamp, Mart. (B. C.), Cedar Brook (Cr.) (Ke.), Gloucester (Sa.), Atco (Te.), Clementon, Lindenwold (VP.). Gloucester — Near Malaga (C.), near Mickleton (He.), Swedesboro (Li.), Washington Park

- (VP.). *Atlantic*—Absecon, Hammoncton (Wn.). *Ocean*—Forked River (Cr.), Toms River (Te.). *Mercer*—Trenton (C.).
2. *CAREX FOLLICULATA* L. M. p. 191. Swamps and wet meadows. Summer.
3. *CAREX INTUMESCEENS* Rudge. M. p. 191. Swamps, bogs, and wet woods. Summer.
4. *CAREX ASA-GRAYI* Bailey. M. p. 191. Swamps and wet meadows. Summer.
Delaware—Near Castle Rock (Ja.), near Ridley Creek, West Chester Road (VP.).
Gloucester—Swedesboro (Li.). *Cape May*—Goshen (He.). *Atlantic*—Egg Harbor, Dr. J. B. Brinton (He.). *Hunterdon*—Bull's Island (Br.).
5. *CAREX LUPULINA* Muhl. M. p. 192. Swamps and wet pastures. Summer.
6. *CAREX LUPULIFORMIS* Sartwell. M. p. 192. Swamps. Summer.
Bucks—Nockamixon (Cr.), Rock Hill, Bristol (Fr.). *Montgomery*—Fort Washington (VP.). *Delaware*—Palmer's Mill, Upper Providence (B. Sm.). *Lehigh*—Lehigh (Kr.). *Northampton*—(P.).
New Castle—Newark, Canby; Townsend, Commons.
7. *CAREX GRANDIS* Bailey. M. p. 192. Swamps. Summer.
New Castle—Townsend, Canby and Tatnall.
8. *CAREX UTRICULATA* Boott. M. p. 194. Marshes. Summer.
Bucks—Quakertown, Mart. (B. C.), Penn Valley (Cr.) (Fr.).
Camden—Kaighn's Point (C.).
New Castle—Harmony Mills.
9. *CAREX MONILE* Tuckerm. M. p. 194. Marshes and wet meadows. Summer.
Bucks—Sellersville (Fr.) (Ja.), Narrowsville (Li.). *Delaware*—Tinecum, A. H. Smith (B. Sm.) (St.). *Chester*—(P.). *Lancaster*—(P.).
Hunterdon—Kingwood (C.).
New Castle—Brandywine, etc.; Townsend and Farnhurst, Commons.
10. *CAREX BULLATA* Schk. M. p. 194. Swamps. Summer.
11. *CAREX RETRORSA* Schwein. M. p. 194. Swamps and wet meadows. Summer.
Bucks—(P.).
12. *CAREX LURIDA* Wahl. M. p. 194. Swamps and wet meadows. Summer.
- 12a. *CAREX LURIDA FLACCIDA* Bailey. M. p. 195. Swamps and wet meadows. Spring.
Bucks—Argus (Fr.).
- 12b. *CAREX LURIDA PARVULA* (Paine) Bailey. M. p. 195.
Bucks—Argus (Fr.).
13. *CAREX SCHWEINITZII* Dewey. M. p. 195. Swamps and bogs. Summer.
New Castle—Thompson's, Brakely.
14. *CAREX HYSTRICINA* Muhl. M. p. 195. Swamps and low meadows. Summer.
15. *CAREX COMOSA* Boott. M. p. 195. Swamps. Summer.
16. *CAREX FRANKII* Kunth. M. p. 196. Swamps and wet meadows. Summer.
Chester—(P.). *Lancaster*—York Furnace (Cr.).

17. *CAREX SQUARROSA* L. M. p. 196. Swamps and bogs. Summer.
18. *CAREX TRICHOCARPA* Muhl. M. p. 196. Marshes and wet meadows. Summer.
Bucks—Penn Valley (Cr.), Sellersville (Fr.), Nockamixon (He.).
Delaware—Hey's Dam, Upper Darby, Dr. Geo. Smith (Fu.), Castle Rock (VP.). *Lancaster*—Lancaster, Porter (B. C.). *Northampton*—(P.).
Camden—Cedar Brook (Cr.).
19. *CAREX RIPARIA* Curtis. M. p. 197. Swamps. Summer.
Philadelphia—(P.). *Bucks*—Argus (Cr.), near Quakertown (Fr.).
Delaware—Tinicum, A. H. Smith (Fu.) (St.), Wawa (Ja.).
Gloucester—River swamps along Delaware (C.), Repaupo (Ja.). *Salem*—Near Salem, near Woodstown (He.). *Ocean*—Manchester (C.).
New Castle—Holly Oak, Canby; Delaware Junction, Commons.
20. *CAREX SHORTIANA* Dewey. M. p. 197. Moist meadows and thickets. Early summer.
Lancaster—Conewago (P.).
21. *CAREX SCABRATA* Schwein. M. p. 197. Woods and thickets. Summer.
Philadelphia—Wissahickon (P.). *Bucks*—Springfield (Fr.). *Delaware*—Tinicum (Le.), near Media (B. Sm.), Crum Creek (St.), Castle Rock (VP.). *Chester*—(P.). *Lancaster*—(P.). *Berks*—Hamburg (He.) (Ke.) (Li.). *Northampton*—(P.).
Hunterdon—Milford, Rosemont (C.).
New Castle—Centerville, Commons; opposite Twadell's, Canby.
22. *CAREX VESTITA* Willd. M. p. 198. Sandy woods. Summer.
Bucks—Penn Valley (Cr.), Sellersville (Fr.), Bristol (P.). *Delaware*—Tinicum (Fu.) (Sa.) (St.), near Chester, Rhoads' Swamp, Marple (Fu.) (B. Sm.). *Lancaster*—Smithville (P.). *Northampton*—Pen Argyl (P.).
Camden—East Camden (Te.), Haddonfield, Lindenwold (VP.). *Gloucester*—Mickleton (He.), Swedesboro (Li.), Washington Park (VP.).
Atlantic—Egg Harbor (B. Sm.). *Hunterdon*—Sergeantsville, Rosemont (C.).
New Castle—Harmony, Tatnall; Townsend, Canby.
23. *CAREX WALTERIANA* Bailey. M. p. 198. Pine-barren swamps. Early summer.
Montgomery—Shannonville (Cr.). *Delaware*—Tinicum (Fu.).
Burlington—Quaker Bridge (He.), Speedwell (St.). *Camden*—Cedar Brook (Ke.), Berlin (Te.), Clementon (VP.). *Gloucester*—Williamstown (He.). *Atlantic*—Hammononton (Fr.), Egg Harbor (He.), May's Landing (Li.). *Ocean*—Manchester, New Egypt (C.), Toms River (Ke.).
24. *CAREX LANUGINOSA* Michx. M. p. 198. Swamps and wet meadows. Summer.
Bucks—Sellersville (Fr.). *Delaware*—Rhoads' Swamp, C. E. Smith (Fu.). *Chester*—(P.). *Lancaster*—(P.). *Berks*—(P.).
Gloucester—Near Mickleton (He.). *Monmouth*—Squan (C.).
New Castle—Brakely, frequent.
25. *CAREX FILIFORMIS* L. M. p. 198. Wet meadows and swamps. Summer.
Bucks—Tullytown (Fr.). *Delaware*—Rhoads' Swamp, Marple, C. E.

- Smith (Fu.) (B. Sm.). Lancaster—Christiana (St.). Berks—Hamburg (Li.).*
New Castle—Thompson's, Brakely, Farnhurst, Commons.
26. *CAREX HIRTA* L. M. p. 198. Ballast. Summer.
Philadelphia—Greenwich Point (Te.).
Camden—Camden (Ja.) (He.).
27. *CAREX FUSCA* All. M. p. 200. Bogs. Early summer.
Bucks—Bedminster, I. S. Moyer (B. C.), Tullytown (Cr.), Sellersville (Fr.), Nockamixon (He.) (Li.). Lancaster—(P.). Lehigh—(P.).
New Castle—Farnhurst, Canby.
28. *CAREX STRICTA* Lam. M. p. 200. Swamps. Summer.
- 28a. *CAREX STRICTA ANGUSTANA* (Boott.) Bailey. M. p. 200. Swamps. Summer.
Bucks—Tullytown, Bicknell (Fr.). Lancaster—(P.). Northampton—(P.).
29. *CAREX HAYDENI* Dewey. M. p. 200. Swamps. Summer.
Bucks—Sellersville (Fr.).
30. *CAREX AQUATILIS* Wahl. M. p. 200. Swamps and along streams. Summer.
Delaware—(P.).
Camden—Camden (C.).
31. *CAREX GOODENOVII* J. Gay. M. p. 201. Wet grounds. Summer.
Bucks—Penn Valley (Cr.). Delaware—Lazaretto, C. F. Saunders (He.), Palmer's Mills, Upper Providence (B. Sm.), Tinicum (P.). Lancaster—Christiana (St.).
32. *CAREX TORTA* Boott. M. p. 202. Marshes and wet thickets. Summer.
Bucks—Argus (Cr.), near Sellersville (Fr.), Nockamixon (He.) (Li.).
Delaware—Holland's Bridge, Upper Providence, Dr. Geo. Smith; Hey's Dam, Upper Darby, Dr. Geo. Smith (Fu.), Wawa (He.), Palmer's Mills, Upper Providence (B. Sm.), Castle Rock (VP.). Chester—(P.). Lancaster—Lancaster (Kr.). Northampton (P.).
New Castle—Allapokas, Beaver Run, Canby.
33. *CAREX PRASINA* Wahl. M. p. 202. Meadows and moist thickets. Early summer.
Philadelphia—Germantown (St.). Bucks—Springfield, Rock Hill (Fr.), Nockamixon (He.). Montgomery—Bryn Mawr (Te.). Delaware—Wawa (Sa.). Chester—(P.). Lancaster—Lancaster (Kr.). Berks—(P.). Northampton—(P.).
Gloucester—Mullica Hill (C.), near Mickleton (He.), Swedesboro (Li.).
New Castle—Frequent.
34. *CAREX LITTORALIS* Schwein. M. p. 202. Pine-barren swamps. Early summer.
Delaware—Tinicum (Sa.) (St.).
Gloucester—Near Mickleton (He.). Atlantic—Egg Harbor (Sa.).
Ocean—Manchester (C.).
New Castle—Townsend, Canby.
35. *CAREX LIMOSA* L. M. p. 203. Bogs. Summer.
Bucks—Rock Hill (Cr.) (Fr.).

Gloucester—Repaupo (Cr.) (Li.), near Mickleton (Ha.), Swedesboro (Li.).

New Castle—Thompson's.

36. *CAREX CRINITA* Lam. M. p. 203. Swamps and wet woods. Summer.

37. *CAREX GYNANDRA* Schwein. M. p. 204. Swamps. Summer.

Chester—(P.). *Northampton*—(P.).

38. *CAREX VIRESCENS* Muhl. M. p. 204. Dry woods and thickets. Summer.

39. *CAREX COSTELLATA* Britton. M. p. 204. Woods. Summer.

Philadelphia—(P.). *Bucks*—Rock Hill (Fr.). *Delaware*—Wawa, Dr. J. B. Brinton (He.), Crum Creek (St.). *Chester*—Whitford (Li.). *Lancaster*—(P.). *Northampton*—Easton, Porter (B. C.).

40. *CAREX TRICEPS* Michx. M. p. 205. Woods, fields and swamps. Summer.

41. *CAREX CAROLINIANA* Schwein. M. p. 205. Meadows. Summer.

Philadelphia—92d street marsh (St.), Wissahickon (VP.). *Bucks*—Narrowsville (Li.). *Delaware*—Rifle Range (Cr.), Pusey's Woods, A. H. Smith (Fu.) (B. Sm.), Crum Creek (St.).

Gloucester—Timber Creek, C. A. Boice (B. C.), Mickleton (C.), Swedesboro (Li.).

42. *CAREX GRACILLIMA* Schwein. M. p. 205. Moist woods and meadows. Summer.

Philadelphia—Byberry, Mart. (B. C.). *Bucks*—Tullytown (Cr.), Sellersville, Rock Hill (Fr.). *Montgomery*—(P.). *Delaware*—Darby Creek, Dr. Geo. Smith and A. H. Smith (Fu.), Wawa (Sa.), Swarthmore (Te.), Lewis Mill, Crum Creek (VP.). *Chester*—Cheyney, Kennett (St.). *Lancaster*—(P.). *Berks*—(P.). *Lehigh*—(P.). *Northampton*—Seidersville, A. S. Bechdolt (B. C.).

New Castle—Frequent.

43. *CAREX FESTIVALIS* M. A. Curtis. M. p. 205. Mountain woods. Summer.

Chester—(P.).

New Castle—Brandywine Creek at State Line, Canby; Burris Run, Commons.

44. *CAREX DAVISHI* Schwein. & Torr. M. p. 206. Moist thickets and meadows. Early summer.

Philadelphia—(P.). *Bucks*—Nockamixon (Cr.) (Li.), near Pipersville (Fr.). *Chester*—(P.). *Lancaster*—(P.). *Northampton*—Easton, Porter (B. C.).

New Castle—Frequent.

45. *CAREX LONGIROSTRIS* Torr. M. p. 206. Banks and moist thickets. Summer.

Bucks—Nockamixon. *Northampton*—Easton (Ca.), Pen Argyl (U. C. S.).

Hunterdon—Byram, Lambertville (C.).

New Castle—Dupont's, Brakely.

46. *CAREX ARCTATA* Scott. M. p. 207. Dry woods and thickets. Spring.

Bucks—Penn Valley (Cr.).

Gloucester—Swedesboro (Li.).

47. *CAREX TENUI* Budge. M. p. 207. Woods. Summer.
Philadelphia—Byberry, *Mart.* (B. C.). *Bucks*—Quakertown (Fr.).
Montgomery—Shannonville (Cr.), Walnut Hill (VP.). *Delaware*—Tinicum, Dr. Geo. Smith (Fa.) (Sa.) (B. Sm.) (St.). *Chester*—(P.). *Lancaster*—(P.).
New Jersey—Frequent.
New Castle—Frequent.
48. *CAREX OBLITA* Steud. M. p. 207. Bogs. Summer.
Camden—Griffith's Swamp, *Mart.* (B. C.), Grenloch (He.), Clementon (VP.). *Gloucester*—Near Mickleton (He.), Swedesboro (Li.), Washington Park (VP.). *Cape May*—East Creek (C.). *Atlantic*—Absecon (C.), May's Landing (Fr.).
49. *CAREX GRISEA* Wahl. M. p. 207. Woods and thickets. Summer.
Philadelphia—Byberry, *Mart.* (B. C.), Germantown (St.), Old York Road (Ta.). *Bucks*—Nockamixon (Cr.) (He.), near Sellersville (Fr.). *Delaware*—Haverford (Le.), Essington, Wawa (Sa.). *Chester*—Kennett (St.). *Lancaster*—(P.). *Northampton*—Easton, *Porter* (B. C.) (Ca.). *Burlington*—Medford (St.). *Gloucester*—Near Mickleton (He.), Swedesboro (Li.).
New Castle—Frequent.
50. *CAREX AMPHIBOLA* Steud. M. p. 207. Dry soil. Spring.
Bucks—Near Sellersville (Fr.). *Delaware*—Tinicum (P.).
New Castle—Greenbank.
51. *CAREX GLAUCODEA* Tuckerm. M. p. 208. Open fields and meadows. Early summer.
Bucks—Narrowsville, A. P. Garber (B. C.), Tullytown (Cr.), Argus, Rock Hill (Fr.). *Montgomery*—(P.). *Delaware*—Pusey's Wood (Fa.). *Chester*—(P.). *Lancaster*—(P.). *Northampton*—(P.).
Camden—Haddonfield (C.). *Gloucester*—Near Woodbury, Almonesson (He.), Swedesboro (Li.). *Salem*—Biddleton (He.). *Ocean*—Horners-town (C.).
New Castle—Holly Oak, Canby.
52. *CAREX GRANULARIS* Muhl. M. p. 208. Moist meadows. Early summer.
Philadelphia—Byberry, *Mart.* (B. C.), Germantown (St.). *Bucks*—Tullytown, Rock Hill (Cr.), near Sellersville (Fr.). *Delaware*—Essington (Sa.), Marple (B. Sm.). *Chester*—Near West Chester (He.). *Lancaster*—Lancaster (Kr.). *Northampton*—Easton, *Porter* (B. C.).
Burlington—Medford (St.). *Camden*—Grenloch (He.) (Li.). *Gloucester*—Swedesboro (Li.).
New Castle—Frequent.
53. *CAREX SCHREIBERI* Britton. M. p. 208. Moist meadows. Summer.
Northampton—Easton (P.).
54. *CAREX FLAVA* L. M. p. 208. Ballast. Summer.
Camden—Kaighn's Point, C. F. Parker (B. C.).
55. *CAREX PALLESCENS* L. M. p. 209. Fields and meadows. Summer.
Bucks—Penn Valley (Cr.). *Lehigh*—Salsburg (Kr.).
Gloucester—Swedesboro (Li.). *Ocean*—New Egypt (C.).

56. *CAREX CONOIDEA* Schk. M. p. 210. Meadows. Spring.
Philadelphia—Germantown (St.). *Bucks*—Quakertown (Cr.), near Sellersville (Fr.), Nockamixon (He.) (Li.), Rock Hill, Dr. J. B. Brinton (He.). *Delaware*—Valley of Darby Creek (B. Sm.). *Lancaster*—Near Lancaster, Porter (B. C.). *Berks*—(P.). *Northampton*—(P.).
Gloucester—Swedesboro (Li.).
New Castle—Harmony, Tatnall; Ashland, Commons.
57. *CAREX OLIGOCARPA* Schk. M. p. 210. Dry woods and thickets. Summer.
Bucks—Harr's Mill (Fr.). *Lancaster*—(P.). *Northampton*—(P.).
New Castle—Below Dupont's, Canby.
58. *CAREX HITCHCOCKIANA* Dewey. M. p. 210. Woods and thickets. Summer.
Bucks—Nockamixon (He.), Pencoyd (Te.). *Lancaster*—Lancaster, Porter (B. C.). *Northampton*—Easton, Porter (B. C.) (Ca.).
59. *CAREX POLYMORPHA* Muhl. M. p. 210. Swamps and wet meadows. Summer.
Bucks—Nockamixon (He.). *Lancaster*—(P.).
Camden—Cedar Brook (Cr.). *Gloucester*—Near Mickleton (He.) (Li.).
60. *CAREX TETANICA* Schk. M. p. 210. Meadows and wet woods. Summer.
Bucks—Argus (Cr.), Sellersville (Fr.). *Lancaster*—(P.). *Northampton*—(P.).
Hunterdon—Baptisttown (C.).
New Castle—Brandywine, etc.
61. *CAREX MEADII* Dewey. M. p. 211. Swamps and wet meadows. Summer.
Bucks—Argus (Cr.), Sellersville (Fr.). *Delaware*—Pyle's Bridge, W. M. Canby (B. Sm.). *Lancaster*—(P.).
62. *CAREX LAXIFLORA* Lam. M. p. 211. Meadows and thickets. Summer.
- 62a. *CAREX LAXIFLORA BLANDA* (Dewey) Boott. M. p. 211. Meadows and thickets. Summer.
Bucks—Sellersville (Fr.). *Montgomery*—(P.). *Delaware*—Wawa (Sa.). *Chester*—Whitford (Li.). *Northampton*—Easton, Porter (B. C.).
New Jersey—Common.
New Castle—Centerville, Commons.
- 62b. *CAREX LAXIFLORA VARIANS* Bailey. M. p. 211. Meadows and thickets. Summer.
Philadelphia—Shawmont (Sa.). *Bucks*—Narrowsville (Li.), Wawa, Dr. J. B. Brinton (He.).
Gloucester—Swedesboro (Li.).
- 62c. *CAREX LAXIFLORA PATULIFOLIA* (Dewey) Carey. M. p. 211. Open places. Summer.
Bucks—Argus (Cr.). *Delaware*—Darby (B. Sm.). *Lancaster*—(P.).
Northampton—(P.).
Gloucester—Mickleton (He.). Swedesboro (Li.).
63. *CAREX STYLOFLEXA* Buckley. M. p. 211. Woods and thickets. Early summer.
Bucks—Near Sellersville (Fr.). *Montgomery*—(P.). *Delaware*—

- Tinieum*, Dr. Geo. Smith (Fu.) (St.). Lancaster—(P.). Berks—(P.). Northampton—(P.).
Gloucester—Near Mickleton (He.). *Hunterdon*—Rosemont (C.).
New Castle—Common.
64. *CAREX STRIATULA* Michx. In woods, meadows, and thickets.
Lancaster—(P.).
65. *CAREX DIGITALIS* Willd. M. p. 211. Woods and thickets. Early summer.
Philadelphia—Byberry, Mart. (B. C.), Shawmont (Sa.), Old York Road (Te.). *Bucks*—Argus (Cr.), Rock Hill (Fr.). *Montgomery*—(P.). *Delaware*—Darby, Upper Providence, Dr. Geo. Smith (Fu.). *Chester*—(P.). *Lancaster*—Lancaster (Kr.). *Northampton*—Easton, Porter (B. C.).
New Castle—Brandywine, Centerville, Commons.
66. *CAREX ALBURSINA* Sheldon. M. p. 212. Woods. Summer.
Bucks—Rock Hill (Fr.), Nockamixon (He.). *Delaware*—Wawa (Sa.), Crum Creek (St.). *Lancaster*—York Furnace (St.).
Gloucester—Near Mickleton (He.), Swedesboro (Li.).
New Castle—Mount Cuba, Commons.
67. *CAREX PLANTAGINEA* Lam. M. p. 212. Woods. Early summer.
Bucks—Narrowsville, T. C. Porter (Fu.), Plumstead (Fr.). *Chester*—Near Pleasantville (P.).
68. *CAREX LAXICULMIS* Schwein. M. p. 212. Woods and thickets. Spring.
Philadelphia—Byberry, Mart. (B. C.), Old York Road (Te.). *Bucks*—Penn Valley (Cr.), Springfield, Rock Hill (Fr.). *Montgomery*—Bryn Mawr (Te.). *Delaware*—Hey's Dam, Upper Darby, Dr. Geo. Smith (Fu.). *Lancaster*—(P.). *Northampton*—(P.).
Hunterdon—Rosemont (C.).
69. *CAREX PTYCHOCARPA* Steud. M. p. 212. Moist woods and thickets. Summer.
Bucks—Tullytown (Cr.). Bristol, Quakertown (Fr.). *Delaware*—*Tinieum* (Sa.), Crum Creek (St.). *Chester*—Near West Chester, Kennett (St.).
Gloucester—Center Square, Mickleton (He.), Swedesboro (Li.).
New Castle—Townsend, Canby; Purgatory Swamp near Coochs Bridge, Commons and Tatnall.
70. *CAREX PLATYPHYLLA* Carey. M. p. 212. Woods and thickets. Spring.
Bucks—Plumstead (Fr.), Nockamixon (He.) (Ke.). *Chester*—Phoenixville, Dr. J. B. Brinton (He.). *Lancaster*—(P.). *Northampton*—Easton (Ca.).
Gloucester—Swedesboro (Li.). *Somerset*—Peapack (C.). *Hunterdon*—Lambertville (C.).
New Castle—Frequent.
71. *CAREX LIVIDA* (Wahl.) Willd. M. p. 212. Pine barrens. Summer.
Burlington—Atsion (C.), Speedwell (St.). *Camden*—Ancora (He.) (Li.). *Ocean*—Manchester (C.).

72. *CAREX SETIFOLIA* (Dewey) Britton. M. p. 213. Limestone rocks. Early summer.
Northampton—Easton, Porter (B. C.).
73. *CAREX PEDUNCULATA* Muhl. M. p. 214. Dry woods. Early summer.
Bucks—Quakertown Moyer (P.). Lancaster—(P.). Berks—(P.).
New Castle—Below High Bridge, Canby.
74. *CAREX PEDICELLATA* (Dewey) Britton. M. p. 214. Dry soil. Early summer.
Philadelphia—(P.). Bucks—Durham (Fr.). Lancaster—(P.).
Northampton—(P.).
Hunterdon—Byram (C.).
75. *CAREX PENNSYLVANICA* Lam. M. p. 214. Dry soil. Spring.
76. *CAREX VARIA* Muhl. M. p. 214. Dry soil. Early summer.
Philadelphia—Byberry, Mart. (B. C.). Bucks—Argus, Tullytown (Cr.), Sellersville (Fr.). Montgomery—Bryn Mawr (Te.). Delaware—Palmer's Mills, Upper Providence (Fu.) (B. Sm.). Chester—Valley Forge (He.). Lancaster—Lancaster (Kr.). Berks—(P.). Northampton—Easton, Porter (B. C.) (Ca.).
New Jersey—Frequent.
New Castle—Frequent.
77. *CAREX ALBICANS* Willd. M. p. 215. Dry soil. Spring.
Bucks—Tullytown, Bicknell (Fr.).
78. *CAREX NIGRO-MARGINATA* Schwein. M. p. 215. Dry soil. Early summer.
Bucks—Durham, Ruth (P.). Montgomery—Willow Grove (P.).
Northampton—(P.).
New Jersey—Frequent.
New Castle—Rockland, Richardsons Mill, Townsend, Commons.
79. *CAREX UMBELLATA* Schk. M. p. 215. Dry soil. Early summer.
Philadelphia—(P.). Bucks—Argus, Penn Valley (Cr.). Lancaster—(P.). Northampton—(P.).
New Jersey—Common.
New Castle—Brandywine, Canby; Centerville, Commons.
80. *CAREX PUBESCENS* Muhl. M. p. 215. Woods and thickets. Summer.
Philadelphia—Byberry, Mart. (B. C.), above Manayunk (He.), Shawmont (Sa.), Germantown (St.), Wissahickon (VP.). Bucks—Argus, Tullytown (Cr.), 3-mile Run (Fr.). Montgomery—(P.). Delaware—Valley of Darby Creek (B. Sm.), Lewis Mill, Crum Creek (VP.). Chester—(P.). Lancaster—(P.). Northampton—Easton, Porter (B. C.). Gloucester—Swedesboro (Li.). Hunterdon—Rosemont (C.).
New Castle—Brandywine etc. Frequent.
81. *CAREX WILLDENOVII* Schk. M. p. 216. Dry woods and thickets. Early summer.
Bucks—Rock Hill (Fr.). Lancaster—Lancaster, Porter (B. C.). Northampton—(P.).
Gloucester—Woodbury (C.). Hunterdon—Rosemont (C.), Milford, Porter (Fu.).

- New Castle*—Mount Cuba, Wilmington, *Commons*.
82. *CAREX JAMESII* Schwein. M. p. 216. Dry woods and thickets. Spring.
Montgomery—Betswood (Cr.). *Lancaster*—Millersville, A. P. Garber
(B. C.). *Dauphin*—(P.).
83. *CAREX LEPTALEA* Wahl. M. p. 217. Bogs and swamps. Summer.
Bucks—Rock Hill (Fr.). *Delaware*—(P.). *Chester*—(P.). *Lancaster*—*Christiana* (St.). *Berks*—Hamburg (He.) (Ke.) (St.). *Northampton*—Easton, Porter (B. C.).
Gloucester—Near Mickleton (He.).
New Castle—Frequent.
84. *CAREX EXILIS* Dewey. M. p. 217. Bogs. Summer.
Lancaster—Lancaster (Kr.).
Burlington—Hanover, Pleasant Mills (C.). *Gloucester*—Swedesboro
(Li.). *Atlantic*—Absecon (C.), Egg Harbor, Dr. J. B. Brinton (He.),
Hammonton (Sa.). *Ocean*—Manchester, Burrsville, Toms River (C.).
Monmouth—Shark River (C.).
85. *CAREX CONJUNCTA* Boott. M. p. 219. Moist meadows and thickets.
Summer.
Philadelphia—Banks of Schuylkill (He.).
86. *CAREX STIPATA* Muhl. M. p. 219. Swamps and wet meadows. Early
summer.
Philadelphia—Girard Point (Ke.), Germantown (St.). *Bucks*—Near
Sellersville (Fr.), Bonair (Sa.). *Montgomery*—Willow Grove (U. C. S.).
Delaware—Valley of Darby Creek (B. Sm.). *Chester*—(P.). *Lancaster*
—York Furnace (Cr.). *Northampton*—Easton, Porter (B. C.).
New Jersey—Common.
New Castle—Common.
87. *CAREX TERETIUSCULA* Gooden. M. p. 219. Swamps and wet meadows.
Early summer.
Gloucester—Near Mickleton (He.).
88. *CAREX ALOPECOIDEA* Tuckerm. M. p. 220. Meadows.
Lancaster—(P.).
89. *CAREX VULPINOIDEA* Michx. M. p. 220. Swamps and wet meadows.
Summer.
90. *CAREX XANTHOCARPA* Bicknell. M. p. 220. Fields. Summer.
Bucks—Argus (Fr.).
- 90a. *CAREX XANTHOCARPA ANNECTENS* Bicknell. M. p. 220. Fields. Summer.
Bucks—Tullytown, Bicknell (Fr.).
91. *CAREX ROSEA* Schk. M. p. 221. Woods and thickets. Early summer.
- 91a. *CAREX ROSEA RADIATA* Dewey. M. p. 221. Open places and woods.
Early summer.
Philadelphia—Germantown (St.). *Bucks*—Argus, Penn Valley (Cr.),
Sellersville (Fr.). *Chester*—(P.). *Lancaster*—(P.).
New Jersey—Common.
New Castle—Common.

92. *CAREX RETROFLEXA* Muhl. M. p. 221. Woods and thickets. Early summer.

Bucks—Rock Hill (Fr.). *Delaware*—Upper Darby, Dr. Geo. Smith (Fu.), Crum Creek (St.). *Lancaster*—Lancaster, Porter (B. C.). *Northampton*—Easton, Porter (B. C.).

Camden—Ancora (Li.). *Monmouth*—Squan (C.). *Hunterdon*—Rosemont (C.).

New Castle—Similar situations as *C. rosea*. Scarce.

93. *CAREX SPARGANIODES* Muhl. M. p. 222. Woods and thickets. Summer.

Philadelphia—Shawmont (Sa.), Flat Rock Dam (VP.). *Bucks*—Harris Dam (Fr.), Nockamixon (He.). *Montgomery*—Pencoyd (Te.). *Delaware*—Valley of Darby Creek (B. Sm.), Crum Creek (St.). *Chester*—(P.). *Lancaster*—Lancaster (Kr.). *Northampton*—Easton, Porter (B. C.).

Camden—Haddonfield (St.). *Gloucester*—Swedesboro (Li.).

New Castle—Mount Cuba (Ke.), Centerville, Commons.

94. *CAREX CEPHALOIDEA* Dewey. M. p. 222. Dry fields and on hills. Early summer.

Bucks—Rock Hill, Dr. J. B. Brinton (He.). *Lancaster* (P.). *Lehigh*—Salsburg (Kr.). *Northampton*—Easton, Porter (B. C.).

Gloucester—Swedesboro (Li.).

95. *CAREX CEPHALOPHORA* Muhl. M. p. 222. Dry fields and on hills. Early summer.

Philadelphia—Byberry, Mart. (B. C.), Banks of Schuylkill (He.), Germantown (St.), Wissahickon (VP.). *Bucks*—Penn Valley (Cr.), near Sellersville, Rock Hill (Fr.). *Montgomery*—(P.). *Delaware*—Wawa (Sa.), Valley of Darby Creek (B. Sm.), Crum Creek (St.). *Chester*—Westtown (St.), Paoli (Te.). *Lehigh*—Salsburg (Kr.). *Northampton*—(P.).

New Jersey—Frequent.

New Castle—Frequent.

96. *CAREX MUHLENBERGII* Schk. M. p. 222. Dry fields and on hills. Early summer.

Philadelphia—Byberry, Mart. (B. C.). *Bucks*—Near Sellersville (Fr.). *Chester*—(P.). *Lancaster*—Lancaster (Kr.). *Northampton*—Easton, Porter (B. C.).

Camden—Griffiths Swamp (C.). *Gloucester*—Near Mickleton (He.), Swedesboro (Li.).

New Castle—Frequent.

- 96a. *CAREX MUHLENBERGII XALAPENSIS* (Kunth.) Britton. M. p. 222. Dry fields. Summer.

Philadelphia—(P.). *Bucks*—Rock Hill, Point Pleasant (Fr.). *Northampton*—Easton, Porter (B. C.).

97. *CAREX STERILIS* Willd. M. p. 223. Moist soil. Early summer.

Bucks—Rock Hill (Fr.). *Montgomery*—(P.). *Delaware*—Springfield (B. Sm.). *Chester*—(P.). *Lancaster*—(P.). *Berks*—(P.). *Northampton*—(P.).

New Jersey—Frequent.

- 97a. *CAREX STERILIS* CEPHALANTHA Bailey. M. p. 223. Moist soil. Early summer.
Chester—(P.). *Lancaster*—(P.).
Gloucester—Mickleton, common (He.), Swedesboro (Li.).
98. *CAREX ATLANTICA* Bailey. M. p. 223. Swamps. Summer.
Bucks—Tullytown (Fr.).
Burlington—Atsion, Quaker Bridge (C.), Bear Swamp (St.).
Camden—Longacoming (C.), Ancora (He.). *Gloucester*—Swedesboro (Li.). *Atlantic*—Mays Landing (Fr.), Hammonton (Sa.). *Ocean*—Toms River (C.).
99. *CAREX INTERIOR* Bailey. M. p. 223. Wet soil. Early summer.
Bucks—Rock Hill, Argus (Fr.). *Delaware*—(P.). *Lancaster*—Dillerville Swamp (P.).
100. *CAREX CANESCENS*. L. M. p. 233. Swamps and bogs. Early summer.
Northampton—(P.).
New Jersey—Common.
New Castle—Blackbird, Commons.
- 101a. *CAREX BRUNNESCENS GRACILIOR* Britton. M. p. 224. Wet places. Summer.
Gloucester—Swedesboro (Li.). — *Atlantic*—Egg' Harbor, Hammonton (Sa.).
102. *CAREX TRISPERMA* Dewey. M. p. 225. Swamps and wet woods. Summer.
Camden—Spring Garden (C.), Cedar Brook (Cr.). *Gloucester*—Malaga (C.). *Cape May*—Dennisville (C.). *Ocean*—Manchester (C.).
103. *CAREX BROMOIDES* Schk. M. p. 225. Bogs and swamps. Summer.
Bucks—Quakertown (Cr.), near Sellersville (Fr.). *Chester*—(P.).
Lancaster—(P.). *Northampton*—(P.).
Gloucester—Repaupo (Ja.). *Cumberland*—Manumuskinn (U. C. S.).
Hunterdon—Rosemont (C.).
104. *CAREX SICCATA* Dewey. M. p. 226. Dry fields and on hills. Early summer.
Northampton—Bethlehem (P.).
105. *CAREX TRIBULOIDES* Wahl. M. p. 226. Meadows. Summer.
Philadelphia—Byberry, Mart. (B. C.). *Bucks*—Sellersville (Fr.).
Delaware—Tinicum (St.). *Chester*—(P.). *Lancaster*—Lancaster (Kr.).
Berks—Hamburg (He.). *Northampton*—(P.).
Camden—Camden (C.), Gloucester (Sa.). *Gloucester*—Mickleton, Mullica Hill (He.), Repaupo (Ja.), Swedesboro (Li.).
New Castle—Common.
- 105a. *CAREX TRIBULOIDES* BEBBII Bailey. M. p. 226. Range of type. Summer.
Bucks—Sellersville (Fr.).
106. *CAREX SCOPARIA* Schk. M. p. 226. Moist soil. Summer.
107. *CAREX CRISTATELLA* Britton. M. p. 227. Meadows and thickets. Summer.

- Bucks*—Near Sellersville (Fr.). *Delaware*—Marple (B. Sm.). *Lancaster*—(P.). *Berks*—Hamburg (He.). *Northampton*—(P.).
New Castle—Harmony, Ashland, Canby.
108. *CAREX ADUSTA* Boott. M. p. 227. Dry soil. Summer.
Philadelphia—Andalusia. *Lancaster*—Lancaster (Kr.).
Gloucester—Swedesboro (Li.). *Hunterdon*—Rosemont (C.).
109. *CAREX FOENEA* Willd. M. p. 227. Dry woods and on rocks. Summer.
Bucks—Penn Valley (Cr.), Tullytown (Cr.). *Delaware*—Tinicum (Ba.). *Chester*—(P.). *Northampton*—(P.).
Gloucester—Near Mickleton (He.).
New Castle—Townsend, Collins, Wills Rock, etc.
- 109a. *CAREX FOENEA PERPLEXA* Bailey. M. p. 227. Dry woods and on rocks. Summer.
Lancaster—York Furnace (Cr.). *Northampton*—(P.).
110. *CAREX STRAMINEA* Willd. M. p. 227. Dry fields. Summer.
- 110a. *CAREX STRAMINEA MIRABILIS* (Dewey) Tuckerm. M. p. 227. Dry fields. Summer.
Gloucester—Near Mickleton (He.), Swedesboro (Li.).
111. *CAREX SILICEA* Olney. M. p. 227. Sands of the sea-coasts. Summer.
New Jersey—Frequent.
112. *CAREX TENERA* Dewey. M. p. 227. Wet soil. Spring.
Bucks—Quakertown, Mart. (B. C.), Sellersville, Tullytown (Fr.).
Delaware—(P.). *Northampton*—Easton (Ca.).
Burlington—Quaker Bridge. *Cape May*—Wildwood (He.).
- 112a. *CAREX TENERA INVISA* (W. Boott.) Britton. M. p. 228. Swales near the seacoast.
Delaware—Glenolden, Dr. J. B. Brinton (P.).
113. *CAREX FESTUCACEA* Willd. M. p. 228. Dry or moist soil. Early summer.
Philadelphia—Byberry, Mart. (B. C.). *Bucks*—Point Pleasant, Penn Valley (Fr.). *Delaware*—Tinicum (St.). *Northampton*—(P.).
Gloucester—Swedesboro (Li.). *Cape May*—Avalon, Dr. J. B. Brinton (He.).
New Castle—Frequent.
114. *CAREX ALATA* Torr. M. p. 228. Moist soil. Spring.
Bucks—Bristol, Tullytown (Fr.). *Montgomery*—(P.).
Camden—Grenloch (He.). *Gloucester*—Swedesboro (Li.). *Cape May*—Holly Beach, Cape May (He.), Wildwood (Ja.) (Li.). *Atlantic*—Atlantic City (C.).
115. *CAREX ALBOLUTESCENS* Schwein. M. p. 228. Wet soil. Early summer.
Bucks—Nockamixon (He.).
New Jersey—Frequent.

Order 4. ARALES.

Inflorescence a fleshy spadix.

Inflorescence a few or solitary flowers on margin or back of minute thallus.

Fam. 1. *Araceae*.Fam. 2. *Lemnaceae*.

Family 1. ARACEAE Neck. Arum Family.

Flowers without a perianth.

Flowers monœcious or diœcious, borne at the base of the spadix.

1. *Arisaema*.

Flowers monœcious, covering the whole spadix.

2. *Peltandra*.

Flowers with a perianth.

Spadix enclosed in a shell-like fleshy spathe.

3. *Spathyema*.

Spadix naked, terminating the scape.

4. *Orontium*.

Spadix naked, borne at the base of a leaf-like spathe.

5. *Acorus*.

1. ARISAEMA Mart.

Spathe hooded, open at the throat, enclosing the spadix.

Hood of spathe striped; spadix stout, club-shaped. 1. *A. triphyllum*.

Hood of spathe deep brown to black; spadix slender, cylindric.

2. *A. pusillum*.

Spathe convolute; summit of the spadix exerted.

3. *A. Dracontium*.

1. ARISAEMA TRIPHYLLUM (L.) Torr. *Jack-in-the-Pulpit*, Indian Turnip.
M. p. 229. Rich woods. Spring.

2. ARISAEMA PUSILLUM Peck. M. p. 229. Shaded bogs. Spring.
Montgomery—Flat Rock (Br.). *Chester*—W. Bradford (St.). *Lancaster*—Christiana (St.).
Burlington—Medford (Br.). *Camden*—Clementon (Br.), Haddonfield (St.). *Gloucester*—Tomlin (St.). *Ocean*—Point Pleasant (Wn.).

3. ARISAEMA DRACONTIUM (L.) Schott. *Green Dragon*, *Dragon-root*. M. p. 230. Wet woods and along streams. Spring.
Philadelphia—Below Schuylkill, Mart. (B. C.), Chews Woods (Je.), Robinson Knoll (Te.). *Bucks*—Sellersville (Fr.), Neshaminy (Re.). *Montgomery*—Perkiomen (Cr.), Sumneytown (Ke.), Ivy Rock (Wn.). *Delaware*—Ridley and Crum Creeks, Darby (Fu.), Lansdowne (He.) (Pe.) (Wn.), Haverford College (Le.), Swarthmore (Pe.) (Sa.) (Wn.), Media (Sa.), Valley of Darby Creek (B. Sm.), Chester (W. Tr.). *Chester*—Chester Valley near Malvern, Valley Forge (Le.). *Lehigh*—Lowlands, Coplay (Kr.). *Dauphin*—Steelton (Wn.).
Burlington—Bordentown (C.). *Camden*—Haddonfield (C.). *Hun-terdon*—Holland Station, Ridge Island, High Bridge (C.).
New Castle—Mount Cuba (Ha.) (Ke.), Wilmington (Wn.), near Granogue, Red Clay Creek, etc.

2. PELTANDRA Raf.

1. PELTANDRA VIRGINICA (L.) Kuntze. *Arrow Arum*. M. p. 230. Swamps and shallow water. Early summer.

3. SPATHYEMA Raf.

1. SPATHYEMA FOETIDA (L.) Raf. *Skunk Cabbage*. M. p. 231. Bogs or moist ground. Early spring.

4. ORONTIUM L.

1. ORONTIUM AQUATICUM L. *Golden Club*. M. p. 231. Swamps and ponds. Spring.
Philadelphia—Byberry, Mart. (B. C.), Neck (Cr.), Holmesburg Junction (Ws.). *Bucks*—Rock Hill (Fr.), Sellersville (Wn.). *Montgomery*—Sumneytown (VP.). *Delaware*—Tinicum, Dr. Geo. Smith (B. Sm.),

Chester (W. Tr.): *Chester*—(P.). *Lancaster*—(P.). *Lehigh*—*Salsburg*, *Jordan* (Kr.). *Northampton*—(P.).
New Jersey and *New Castle*—Frequent.

5. ACORUS L.

1. ACORUS CALAMUS L. Sweet Flag, Calamus. M. p. 231. Swamps: and along streams. Summer.

Family 2. LEMNACEAE Dumort. Duckweed Family.

Thallus with one root or several.

Roots several.

Root solitary.

Thallus rootless.

1. *Spirodela*.

2. *Lemna*.

3. *Wolffia*.

1. SPIRODELA Schleid.

1. SPIRODELA POLYRHZIA (L.) Schleid. M. p. 232. Ponds and pools. Summer.

2. LEMNA L. DUCK-WEED.

Thalli long-stipitate.

Thalli short-stipitate or sessile.

Spathe open.

Spathe sac-like.

1. *L. trisulca*.

2. *L. perpusilla*.

3. *L. minor*.

1. LEMNA TRISULCA L. M. p. 232. Ponds and springy places. Summer.
Philadelphia—*Frankford*, *Jesse Burk* (B. C.). *Bucks*—In shallow pond in Trap Rock Region (Fr.). *Chester*—(P.). *Lancaster*—(P.).
Northampton—(P.).

2. LEMNA PERPUSILLA Torr. M. p. 232. Ponds and springs. Summer.
Northampton—(P.).
New Castle—Ditches near Edgemoor, New Castle, *Commons* (now extinct there).

3. LEMNA MINOR L. M. p. 233. Stagnant water. Summer.

3. WOLFFIA Horkel.

1. WOLFFIA COLUMBIANA Karst. M. p. 234. Floating beneath the surface of stagnant water. Summer.
Philadelphia—*Neck* (Cr.). *Bucks*—*Tullytown* (Cr.).
Camden—*Kaighn's Point* (C.). *Salem*—*Jumbo Station* (He.), W. of *Pedricktown* (Li.).
New Castle—Ditches and Canal Coves.

Order 5. XYRIDALES.

Ovary 1-celled.

Erect-scapose rush-like herbs; flowers in terminal scaly heads or spikes.
 Fam. 1. *Xyridaceae*.

Mud or aquatic herbs, the flowers subtended by spathes (Heteranthera in Pontederiaceae).

Ovary 2-3-celled.

Flowers very small, densely capitate, monœcious or dioecious.

Fam. 2. *Eriocaulaceae*.

Flowers perfect.

Perianth of 2 series of parts, the outer (sepals) green, the inner (petals) colored.

Fam. 3. *Commelinaceae*.

Perianth 6-parted.

Fam. 4. *Pontederiaceae*.

Family 1. **XYRIDACEAE** Lindl. **Yellow-eyed Grass Family.**

1. **XYRIS L. YELLOW-EYED GRASS.**

Lateral sepals wingless, the keel fringed with short hairs.

1. *X. flexuosa*:

Lateral sepals winged, the keel fimbriate or lacerate.

Scapes not bulbous-thickened at the base; leaves flat or but slightly twisted.

Lateral sepals about as long as the bracts, their keels lacerate.

2. *X. Caroliniana*:

Lateral sepals longer than the bracts, their keels long-fimbriate.

3. *X. fimbriata*:

Scapes conspicuously bulbous-thickened at the base; leaves spirally twisted.

4. *X. conocephala*.

1. **XYRIS FLEXUOSA** Muhl. M. p. 235. Bogs. Summer.

2. **XYRIS CAROLINIANA** Walt. M. p. 236. Swamps and bogs. Summer.

Philadelphia — Wissahickon (Me.). *Delaware* — Tinicum, Dr. Geo. Smith (Fu.) (B. Sm.). *Chester* — Coatesville, H. E. Stone (B. C.). *Lancaster* — (P.).

Burlington — Atsion (Fr.). *Camden* — Camden, Mart. (B. C.), Atco (Fr.), Cedar Brook (Ja.). *Gloucester* — Mickleton (He.), Repaupo (Ja.), Tomlin (Ke.), Swedesboro (Li.). *Cape May* — Cape May (Te.). *Atlantic* — Egg Harbor (Sa.) (Wn.). *Ocean* — Forked River (La.) (Mac.). *New Castle* — Thompsons, Ogletown, etc.

3. **XYRIS FIMBRIATA** Ell. M. p. 236. Wet pine barrens. Summer.

Burlington — Quaker Bridge, E. Diffenbaugh (B. C.) (Fu.) Atsion, Jackson (C.). *Gloucester* — Paulsboro (Ja.), Repaupo (Li.). *Atlantic* — Hamonton (C.), Egg Harbor (Mac.).

4. **XYRIS CONOCEPHALA** Sauv. M. p. 236. In dry pine-barrens. Early summer.

Burlington — Batsto, Taunton (C.), Woodmansie (He.). *Atlantic* — Hamonton (Cr.). *Ocean* — Forked River (He.).

Family 2. **ERIOCAULACEAE** Lindl. **Pipe-wort Family.**

I. **ERIOCAULON L. PIPE-WORT.**

Leaf-blades as long as the sheaths, coarsely 3-9-fenestrate-nerved; scapes 7-angled; heads 3-6 mm. in diameter.

Heads densely pubescent, outer flowers spreading, scales reflexed, scape slender.

1. *E. septangulare*.

Heads nearly smooth, flowers and scales all erect, scapes stout.

2. *E. Parkeri*.

Leaf-blades shorter than the sheaths, finely 6-20-fenestrate-nerved; scapes 10-12-angled; heads 6-12 mm. in diameter.

3. *E. compressum*.

Leaf-blades much longer than the sheaths, finely 10-50-nerved; scapes 10-14-angled; heads 8-16 mm. in diameter.

4. *E. deoangulare*.

1. **ERIOCAULON SEPTANGULARE** With. M. p. 237. In ponds or along their borders. Summer.

Bucks — Bristol, Mart. (Fr.).

New Jersey — Common.

New Castle — River shore and St. George's.

2. *ERIOCAULON PARKERI* Robinson. M. p. 1052; 2d ed. Tidal river shores. Late summer.
Philadelphia—Andalusia (Br.), Torresdale (Wn.).
Camden—Camden, above Cooper's Creek (Br.).
3. *ERIOCAULON COMPRESSUM* Lam. M. p. 237. Pine-barren swamps. Summer.
New Jersey—Frequent.
4. *ERIOCAULON DECANGULARE* L. M. p. 237.
Burlington—Quaker Bridge (Fr.), Atsion (He.) (Le.) (Te.). *Camden*
Ateo (Gi.), Cedar Brook (Mac.), Berlin (Te.). *Cape May*—Beesleys
 Point. *Atlantic*—May's Landing (He.) (Li.), Baker's Pond (Li.).
Ocean—Forked River (Cr.), Tuckerton (Sts.) (Te.), Manchester (Te.).

Family 3. **COMMELINACEAE** Reichenb. Spiderwort Family.

Perfect stamens 3, rarely 2; petals unequal; bracts spathe-like.

1. *Commelina*.

Perfect stamens 6, rarely 5; petals all alike; bracts leaf-like.

2. *Tradescantia*.

1. **COMMELINA** L. DAY-FLOWER.

Spathes not united at the base.

Spathes acuminate; capsules 3-celled, 5-seeded.

1. *C. nudiflora*.

Spathes acute; capsules 2-celled, 4-seeded.

2. *C. communis*.

Spathes with united bases.

All three cavities of the ovary with 2 ovules.

Capsules 2-valved, dorsal cavity indehiscent.

3. *C. Virginica*.

Capsules 3-valved, all cavities dehiscent.

4. *C. erecta*.

Ventral cavities of the ovary with 2 ovules, dorsal cavity with one ovule.

5. *C. hirtella*.

1. *COMMELINA NUDIFLORA* L. M. p. 239. Alluvial banks and waste places. Summer.

Philadelphia—Wissahickon (Cr.), Fairmount Park (Gi.). *Delaware*
 —Tinicum, T. C. Palmer (Fu.), Valley of Darby Creek (B. Sm.).
Chester—(P.). *Northampton*—Easton, Porter (B. C.). *Dauphin*—
 Steelton (Wn.).

Burlington—Moorestown, Beverly (C.). *Camden*—Merchantville (C.),
 Kaighns Point (Wn.). *Gloucester*—Woodbury (C.), Center Square near
 Mickleton (He.), Swedesboro (Li.). *Salem*—Penns Grove (C.). *At-*
lantic—Atlantic City (C.), Absecon, Egg Harbor (Wn.).

2. *COMMELINA COMMUNIS* L. M. p. 240. Waste places. Summer and autumn.

Bucks—Sellersville, Tullytown (Fr.). *Lancaster*—(P.). *Northamp-*
ton—(P.). *Dauphin*—Harrisburg (P.).

3. *COMMELINA VIRGINICA* L. M. p. 240. Moist soil. Summer.

4. *COMMELINA ERECTA* L. M. p. 240. Moist soil. Summer.

Lancaster—Peach Bottom (Ca.).

Camden—Kaighns Point (C.).

5. *COMMELINA HIRTELLA* Vahl. M. p. 240. Moist soil. Summer and autumn.

Lancaster—On the Susquehanna (P.).

2. TRADESCANTIA L.

1. *TRADESCANTIA VIRGINIANA* L. *Spiderwort*. M. p. 241. Rich soil. Summer.

Family 4. **PONTEDERIAACEAE** Dumort. Pickerel-weed Family.

- Flowers 2-lipped, stamens 6; fruit a 1-seeded utricle. 1. *Pontederia*.
Flowers regular; stamens 3; fruit a many-seeded capsule. 2. *Heteranthera*.

1. PONTEDERIA L.

1. *PONTEDERIA CORDATA* L. *Pickerel-weed*. M. p. 243. Borders of ponds and streams. Summer.
1a. *PONTEDERIA CORDATA LANCEIFOLIA* (Muhl.) Morong. M. p. 243. Borders of ponds and streams. Summer.
Philadelphia—Delaware river near the city (Cr.). *Lehigh*—(P.).
Burlington—Quaker Bridge (C.), *Atsion* (Fr.). *Gloucester*—Franklin (C.), *Washington Park* (Ja.).

2. HETERANTHERA R. & P.

- Leaves mostly reniform, sometimes cordate-ovate. 1. *H. reniformis*.
Leaves linear, grass-like, floating. 2. *H. dubia*.
1. *HETERANTHERA RENIFORMIS* R. & P. *Mud Plantain*. M. p. 243. Mud or shallow water. Summer.
2. *HETERANTHERA DUBIA* (Jacq.) MacM. M. p. 243. Still water. Summer.

Order 6. **LILIALES**.

Ovary superior (except in *Alettris* of the *Liliaceae*).

Perianth-segments distinct, green or brown, not petal-like; herbs with grass-like leaves and small flowers. Fam. 1. *Juncaceae*.

Perianth-segments distinct, or partly united, at least the inner petal-like. Fruit a capsule.

Capsule mostly septicidal; plants rarely bulbous.

Fam. 2. *Melanthaceae*.

Capsule loculicidal; plants mostly bulbous.

Fam. 3. *Liliaceae*.

Fruit a fleshy berry.

Erect herbs, tendrils none; flowers perfect.

Fam. 4. *Convallariaceae*.

Vines, climbing by tendrils, or rarely erect; flowers dioecious, in axillary umbels.

Fam. 5. *Smilacaceae*.

Ovary inferior, wholly or in part.

Stamens 3, opposite the inner corolla-segments.

Fam. 6. *Haemodoraceae*.

Stamens 6.

Erect perennial herbs; flowers perfect.

Fam. 7. *Amaryllidaceae*.

Twining vines; flowers dioecious.

Fam. 8. *Dioscoreaceae*.

Stamens 3, opposite the outer corolla-segments.

Fam. 9. *Iridaceae*.

Family 1. **JUNCACEAE** Vent. Rush Family.

Leaf-sheaths open; capsule 1-3-celled, many-seeded; placentae parietal or axial.

1. *Juncus*.

Leaf-sheaths closed; capsule 1-celled, 3-seeded, its placenta basal.

2. *Juncoides*.

1. JUNCUS L. RUSH, BOG-RUSH.

Lowest leaf of the inflorescence terete, not conspicuously channeled, erect, appearing like a continuation of the stem, the inflorescence therefore appearing lateral, stem leaves none.

Perianth-parts green, or in age straw-colored. 1. *J. effusus*.

Perianth-parts with a chestnut-brown stripe down either side of the midrib. 2. *J. Balticus*.

Lowest leaf of the inflorescence not appearing like a continuation of the stem, or if so, conspicuously channeled along the upper side, the inflorescence usually appearing terminal.

Leaf-blade transversely flattened (inserted with its flat surface facing the stem), or terete and channeled, not provided with septa.

Flowers bracteolate, inserted singly on the branches of the inflorescence, sometimes clustered or congested, but never in true heads.

Annual; inflorescence, exclusive of its leaves, more than one-third the height of the plant. 3. *J. bufonius*.

Perennial; inflorescence, excluding leaves, not one-third the height of the plant.

Leaf-blade flat, but sometimes involute in drying.

Cauline leaves 1 or 2, rarely wanting; perianth-parts obtuse. 4. *J. Gerardi*.

Cauline leaves none; perianth-parts acute or acuminate.

Inflorescence usually much exceeded by its lowest leaf; flowers seldom plainly secund; perianth 3.5-5.5 mm. long, usually exceeding the capsule; capsule obovoid, broadly rounded at apex, the placenta intruded half way to the axis. 5. *J. tenuis*.

Inflorescence rarely exceeded by its lowest leaf; flowers plainly secund on the branches; perianth 2.5-4 mm. long, equalling the capsule, capsule oblong, 3-sided, truncate at the apex; placenta meeting at the axis.

6. *J. secundus*.

Leaf-blade terete, channeled along the upper side.

Lowest leaf of inflorescence not four lengths of the panicle; capsule oblong to obovoid.

Perianth 2.5-3 mm. long, plainly exceeded by the capsule. 7. *J. Greenei*.

Perianth 3.5-4 mm. long, not exceeded by the capsule. 8. *J. dichotomus*.

Lowest leaf of the inflorescence rarely less than four times as long as the panicle; capsule globose-ovoid.

9. *J. setaceus*.

Flowers not bracteolate, in true heads on branches of the inflorescence. 10. *J. marginatus*.

Leaf-blade not transversely flattened, commonly terete, hollow, provided with septa.

Stamens 6, one opposite each perianth-part.

Heads reduced to one, or rarely two flowers.

11. *J. pelocarpus*.

Heads 2-many-flowered.

Epidermis not roughened.

Plants with two kinds of leaves, one normal, the other basal, submerged, and capillary.

12. *J. militaris*.

Plants without submerged capillary leaves.

Capsule oblong, either abruptly acuminate or bluntly acute. 13. *J. articulatus*.

Capsule subulate.

Leaf-blades erect; inner perianth-parts longer than the outer. 14. *J. nodosus*.

Leaf-blades abruptly divergent from the stem; outer perianth-parts longer than the inner. 15. *J. Torreyi*.

Epidermis of the leaves roughened with minute tubercles. 16. *J. Caesariensis*.

Stamens 3, none opposite the inner perianth-parts.

Capsule tapering evenly into a prominent subulate beak. 17. *J. scirpoides*.

Capsule obtuse to acute at the apex, sometimes mucronate, but not prolonged into a beak.

Seed 0.6-2 mm. long.

Perianth about 2 mm. long, the fruiting head not more than 4 mm. high. 18. *J. brachycephalus*.

Perianth 3-4 mm. long, or if shorter, the fruiting head 4 mm. high or more. 19. *J. Canadensis*.

Seed 0.4-0.5 mm. long.

20. *J. acuminatus*.

1. *JUNCUS EFFUSUS* L. M. p. 246. Marshy ground. Summer.
2. *JUNCUS BALTICUS* Willd. M. p. 247. On shores. Summer.
Lancaster—Dillerville Swamp (P.).
3. *JUNCUS BUFONIUS* L. M. p. 247. Low grounds. Summer.
4. *JUNCUS GERARDI* Lois. M. p. 248. Salt marshes. Summer.
Delaware—Newtown, Serpentine, Dr. Geo. Smith (Fu.).
New Jersey—Frequent.
New Castle—Collins and Wilmington.
5. *JUNCUS TENUIS* Willd. M. p. 248. Fields and roadsides. Summer.
6. *JUNCUS SECUNDUS* Beauv. M. p. 248. Dry soil. Summer.
Bucks—Sellersville (Fr.). *Montgomery*—Summeytown (VP). *Lancaster*—(P.).
New Castle—Serpentine, Commons; Highlands, Canby.
7. *JUNCUS GREENEI* Oakes and Tuckerm. M. p. 248. Near the coast. Summer.
Middlesex—Burts' Creek and Sayreville (C.).
8. *JUNCUS DICHOTOMUS* Ell. M. p. 249. Dry soil near the coast. Summer.
Bucks—Bristol, Tullytown, Point Pleasant (Fr.). *Montgomery*—(P.).
Delaware—Tinicum, Dr. Geo. Smith (Fu.) (B. Sm.).
Camden—Lindenwold (VP). *Gloucester*—Swedesboro (Li.), Timber Creek (Te.). *Cape May*—Holly Beach, Anglesea (He.), Cape May (Te.).
Monmouth—Sandy Hook (C.), Seabright (Ke.).
New Castle—Near Wilmington, Collins, Commons.
9. *JUNCUS SETACEUS* Rostk. M. p. 249. Near the coast. Summer.
Delaware—Tinicum, Dr. Geo. Smith (B. Sm.).
10. *JUNCUS MARGINATUS* Rostk. M. p. 249. Grassy places. Summer.
- 10a. *JUNCUS MARGINATUS ARISTULATUS* (Michx.) Coville. M. p. 249. Moist sandy places, mostly near the coast. Summer.
Delaware—Upper Darby, Dr. Geo. Smith (Fu.).
Burlington—Atsion (Fr.). *Cape May*—Dennisville, E. Dittenbaugh (B. C.), Wildwood, Holly Beach (He.), Cape May (Te.). *Atlantic*—Atlantic City, Landisville (C.). *Monmouth*—Seabright (C.).
New Castle—Shelpot Creek, Collins, Commons.

11. *JUNCUS PELOCARPUS* E. Meyer. M. p. 250. Sandy, wet, or swampy places. Summer.
New Jersey—Pine-barrens. Frequent.
12. *JUNCUS MILITARIS* Bigel. M. p. 250. Bogs and streams. Summer.
Burlington—Atsion, *Mart.* (B. C.), Wading River, Atsion River (C.), Brown Mills (Li.) (Te.), Stafford Forge (St.). *Cape May*—Seaville (C.). *Atlantic*—Egg Harbor River (C.), May's Landing (He.). *Ocean*—Toms River, *Dr. Geo. Smith* (Fu.), Manchester (C.).
13. *JUNCUS ARTICULATUS* L. M. p. 251. Wet grounds. Summer.
Montgomery—Willow Grove (Mac.).
Camden—Petty's Island (C.). *Cape May*—Ocean City (He.).
14. *JUNCUS NODOSUS* L. M. p. 251. Bogs. Summer.
Bucks—Point Pleasant (Fr.). *Lancaster*—(P.). *Northampton*—(P.).
15. *JUNCUS TORREYI* Coville. M. p. 251. Ballast. Summer.
Camden—Petty's Island (C.).
16. *JUNCUS CAESARIENSIS* Coville. M. p. 251. Sandy swamps. Summer.
Burlington—Quaker Bridge, Atsion River (C.). *Camden*—Haddonfield, *Mart.* (B. C.), Griffith's Swamp (C.). *Atlantic*—Pancoast Mills (C.). *Ocean*—Forked River (Sa.).
17. *JUNCUS SCIRPOIDES* Lam. M. p. 251. Wet soil. Summer.
Bucks—Neshaminy, *Mart.* (Fr.). *Montgomery*—(P.). *Delaware*—Tinicum (Fu.) (B. Sm.). *Lancaster*—Tucquan (P.).
Gloucester—Near Mickleton (He.), Swedesboro (Li.). *Cape May*—Anglesea (Ka.). *Middlesex*—Sayreville (C.).
New Castle—Newport, Commons; Townsend, Canby.
18. *JUNCUS BRACHYCEPHALUS* (Engelm.) Buckl. M. p. 252.
Lancaster—(P.).
19. *JUNCUS CANADENSIS* J. Gay. M. p. 252. Moist soil. Summer.
Delaware—Tinicum (Fu.).
New Jersey—Frequent.
- 19a. *JUNCUS CANADENSIS SUBCAUDATUS* Engelm. M. p. 252. Moist soil. Summer.
Bucks—Durham, *Ruth* (P.). *Northampton*—(P.).
Camden—Camden (C.). *Atlantic*—Landisville (C.), May's Landing (Li.). *Monmouth*—Red Bank (C.).
New Castle—Common.
- 19b. *JUNCUS CANADENSIS BREVICAUDATUS* Engelm. M. p. 252. Moist soil. Summer.
Lancaster—(P.).
Camden—Atco (Gi.).
20. *JUNCUS ACUMINATUS* Michx. M. p. 252. Wet sandy soil. Summer.
- 20a. *JUNCUS ACUMINATUS DEBILIS* (A. Gray.) Engelm. M. p. 252. Wet, sandy soil. Summer.
Bucks—Landisville (Fr.). *Lancaster*—(P.).
Burlington—Atsion (He.), Brown Mills (Ta.). *Gloucester*—Center Square (He.). *Salem*—Riddleton (Li.). *Cumberland*—Haleyville (C.).
Cape May—Dennisville (C.). *Ocean*—Forked River (He.).

New Castle—Frequent.

2. JUNCOIDES Adans. WOOD-RUSH.

Inflorescence umbelloid, 1 or 2 flowers on each of its branches.

Inflorescence paniculate, the flowers however appearing crowded in spike-like clusters.

1. *J. pilosum*.

2. *J. campestre*.

1. JUNCOIDES PILOSUM (L.) Kuntze. M. p. 253. Moist woods. Spring.

Bucks—*Argus* (Br.) (Fr.). *Montgomery*—*Sumneytown* (Wn.).

2. JUNCOIDES CAMPESTRE (L.) Kuntze. M. p. 254. Moist fields and woods. Spring.

Family 2. MELANTHACEAE R. Br. Bunchflower Family.

Flowers numerous in terminal erect racemes or panicles.

1. Anthers oblong or ovate, 2-celled.

Anthers introrsely dehiscent.

Anthers extrorsely dehiscent.

Flowers perfect.

Stem very leafy; leaves linear; seeds few.

Leaves basal, oblanceolate; seeds numerous.

Flowers dioecious; stem leafy.

Anthers cordate or reniform, confluent 1-celled.

Plants glabrous.

Perianth-segments not gland-bearing.

Flowers perfect; perianth-segments obtuse.

Flowers polygamous; perianth-segments acuminate.

Perianth-segments bearing 1 or 2 glands, or a spot.

Stem and inflorescence pubescent.

Perianth-segments clawed, free from the ovary.

Perianth-segments not clawed, adnate to the base of the ovary.

Flowers solitary, terminal or opposite the leaves, drooping.

1. *Abama*.

2. *Xerophyllum*.

3. *Helonias*.

4. *Chamaelirium*.

5. *Chrosperma*.

6. *Stenanthium*.

7. *Zygadenus*.

8. *Melanthium*.

9. *Veratrum*.

10. *Uvularia*.

1. ABAMA Adans.

1. ABAMA AMERICANA (Ker.) Morong. *Bog-Asphodel*. M. p. 255. Pine-barren swamps. Summer.

Burlington—*Atsion*, *C. F. Parker* (B. C.), *Batsto*, *Mullica River* (C.), *Quaker Bridge*, *Jones' Mill* (St.). *Gloucester*—*Woodbury* (C.). *Atlantic*—*Pleasant Mills* (C.). *Ocean*—*Forked River*, *Barnegat*, *Toms River* (C.).

New Castle—*Railroad side*, *Vandyke*, *Commons* and *Tatnall*.

2. XEROPHYLLUM Michx.

1. XEROPHYLLUM ASPHODELOIDES (L.) Nutt. *Turkey-Beard*. M. p. 256.

Pine-barrens. Spring.

New Jersey—Frequent.

3. HELONIAS L.

1. *HELONIAS BULLATA* L. *Swamp Pink*. M. p. 256. Bogs. Spring.
Burlington — Medford (Re.). *Camden* — Cedar Brook (Cr.) (He.) (Mac.), Clementon (Je.) (Re.) (Sa.), Gloucester (Sa.), Haddonfield (U. C. S.), Berlin (Te.), Lucaston (VP.). *Gloucester* — Red Bank, *E. Diffenbaugh* (B. C.), Wenonah (Gi.), Mickleton (He.), Washington Park (Ja.), Westville (Re.) (Wn.). *Salem* — Daretown, Berkley (Wa.). *Cumberland* — Millville (Ke.). *Mercer* — Princeton Junction (C.), Princeton (Te.). *Monmouth* — Freehold (C.). *Ocean* — Manchester, Collier's Mills (C.). *Middlesex* — South Amboy (C.).
New Castle — Near Wilmington (Le.), Peach's, *Tatnall*; Farnhurst, Purgatory Swamp near Cooch's, *Commons* and *Tatnall*, rare.

4. CHAMAELIRIUM Willd.

1. *CHAMAELIRIUM LUTEUM* (L.) A. Gray. *Devil's Bit*. M. p. 256. Low ground. Spring.
Philadelphia — Byberry, *Mart.* (B. C.), Wissahickon (Je.) (Re.), Germantown Lane (Me.), Old York Road, Cobb's Creek, Sellers' Mill (Te.). *Bucks* — Plumsteadville (Fr.), Bycot (Ja.). *Montgomery* — Shannonville (Cr.), Ivy Rock (Wn.). *Delaware* — Oheyney (Gi.), Williamson, *Dr. Emily G. Hunt* (He.), Wawa (Ja.), Burmont (Pe.), Swarthmore (Pr.), near Darby, Media (Sa.), barrens of Middletown (B. Sm.), Kellyville, Greenwood near Media (Te.), Concord (W. Tr.), Castle Rock (VP.), Wallingford, Chad's Ford (Wn.). *Chester* — Westtown (Ha.) (Le.), W. Bradford (St.), Greentree (Te.). *Lancaster* — (P.). *Lehigh* — Lehigh Mountain (Kr.). *Northampton* — Easton, *Porter* (B. C.), Bethlehem (Kr.).
New Jersey — Frequent.
New Castle — Guyancourt, Mount Cuba, becoming rare. Formerly found frequently at hilltop near Brewery.

5. CHROSPERMA Raf.

1. *CHROSPERMA MUSCAETOXICUM* (Walt.) Kuntze. *Fly-Poison*. M. p. 257.
 Dry, sandy woods. Early summer.
Philadelphia — Byberry, *Mart.* (B. C.), Willow Grove Ave., Chestnut Hill (Je.), Germantown, extinct(?) (Me.). *Bucks* — Tullytown (Le.). *Montgomery* — Shannonville (Cr.). *Chester* — W. Bradford Twp. (St.). *Lancaster* — (P.).
Burlington — Burlington, Beverly (C.), Pemberton (Le.) (Te.), near Moorestown (Te.). *Camden* — Sicklerstown, *Dr. J. B. Brinton* (B. C.) (Ke.), Camden (C.), Clementon (VP.). *Gloucester* — Mickleton (He.), Tomlin (Ja.), Swedesboro (Li.). *Salem* — Auburn (Wa.). *Cumberland* — Vineland (C.).
New Castle — Speakman's, Ashland, *Commons*; Scott's Swamp.

6. STENANTHIUM Kunth.

1. *STENANTHIUM ROBUSTUM* S. Wats. M. p. 257. Moist soil. Summer.
Lancaster — Pleasant Grove (Ca.), New Texas (Pr.).

7. ZYGADENUS Michx.

1. ZYGADENUS LEIMANTHOIDES (A. Gray) S. Wats. M. p. 258. Swamps, or wet soil. Summer.

Burlington—Near Moorestown, Jos. Walton (He.), Atsion (C.). *Camden*—Lindenwold (VP.). *Ocean*—Toms River (Le.). *Monmouth*—Mount Pleasant (C.).

New Castle—Thompson's, Moore's, rare.

8. MELANTHIUM L.

Blade of the perianth-segments oblong, entire; leaves linear.

1. *M. Virginicum*.

Blade of the perianth-segments nearly orbicular, undulate; leaves oblanceolate.

2. *M. latifolium*.

1. MELANTHIUM VIRGINICUM L. *Bunch-flower*. M. p. 259. Wet places. Summer.

Bucks—Argus, Tullytown (Wn.). *Montgomery*—Sumneytown (VP.). *Delaware*—Williamson (Fu.), Valley of Darby Creek (B. Sm.), Tinicum (VP.). *Chester*—W. Nottingham Twp. (Le.), Westtown (W. Tr.). *Lancaster*—(P.). *Lehigh*—Lehigh Mountain (Kr.).

Burlington—Pemberton (C.), Oliphant's Mill (Wa.). *Camden*—Camden (C.), Kirkwood (Wn.). *Gloucester*—Near Mickleton, locality destroyed (He.), Tomlin (Ja.), Swedesboro (Li.). *Monmouth*—Keyport (C.).

New Castle—General and frequent.

2. MELANTHIUM LATIFOLIUM Desr. M. p. 259. Dry woods and hills. Summer.

Bucks—Argus, Rock Hill (Fr.). *Delaware*—Swarthmore (St.) (Wa.). *Chester*—Coatesville, H. E. Stone (B. C.), Oakbourne (Wn.). *Northampton*—(P.). *Dauphin*—(P.).

Gloucester—Swedesboro (Li.).

New Castle—Centerville, Commons, rare; Brandywine hills and Mount Cuba.

9. VERATRUM L.

1. VERATRUM VIRIDE Ait. *American White Hellebore, Indian Poke*. M. p. 259. Swamps and low ground. Summer.

10. UVULARIA L. BELLWORT.

Capsule obtusely 3-angled, truncate or rounded; leaves perfoliate.

1. *U. perfoliata*.

Capsule acutely 3-angled or 3-winged, acute at each end; leaves sessile.

2. *U. sessilifolia*.

1. UVULARIA PERFOLIATA L. M. p. 260. Rich woods and thickets. Spring.

2. UVULARIA SESSILIFOLIA L. M. p. 260. Moist woods and thickets. Spring.

Family 3. **LILLIAOEAE** Adans. **Lily Family.**

Plants bulbous, or with rootstocks, or fibrous-fleshy roots.

Ovary superior, not adnate to the perianth.

Roots fibrous-fleshy; scape tall; flowers orange or yellow.

1. *Hemerocallis*.

Plants with bulbs or corms.

Flowers umbelled.

2. *Allium*.

Flowers solitary, racemed, corymbed or panicked.

Anthers not introrse.

Anthers versatile; tall herbs.

3. *Lilium*.

Anthers not versatile; low herbs.

Flowers nodding; capsule obovoid; seed globular.

4. *Erythronium*.

Flowers erect; capsule columnar; seed flat.

5. *Tulipa*.

Anthers introrse.

Perianth of 6 separate segments.

6. *Ornithogalum*.

Perianth globose, oblong or urn-shaped.

7. *Muscari*.

Ovary half inferior; roots fibrous; flowers racemed.

8. *Alettris*.

Stem a woody caudex; leaves rigid, mostly bearing marginal fibres.

9. *Yucca*.1. **HEMEROCALLIS** L.

1. **HEMEROCALLIS FULVA** L. *Common Day-lily*. M. p. 261. Meadows and along streams, escaped from cultivation. Summer.

2. **ALLIUM** L. **LEEK, GARLIC, ONION.**

Leaves oblong-lanceolate, absent at flowering time.

1. *A. tricoccum*.

Leaves linear, present at flowering time.

Bulb-coats membranous, not fibrous reticulated.

Flowering umbel nodding.

2. *A. cernuum*.

Flowering umbel erect.

Sepals not keeled; inner filaments toothed under the anthers.

3. *A. vineale*.

Sepals keeled; inner filaments not toothed.

4. *A. carinatum*.

Bulb-coats fibrous-reticulated.

5. *A. Canadense*.

1. **ALLIUM TRICOCCUM** Ait. M. p. 262. Rich woods. Early summer.

Philadelphia—Wissahickon (Je.) (Re.). *Bucks*—Ridge Valley (Fr.).
Montgomery—Shannonville (Cr.), Sumneytown (VP.). *Delaware*—
Haverford, Valley of Darby Creek (B. Sm.), Aston (W. Tr.), Cheyney
 (Wa.). *Lancaster*—Peach Bottom (Ca.), Williston Twp. (Pr.). *Berks*—
 (P.). *Dauphin*—(P.).

Gloucester—Swedesboro (Li.). *Salem*—Salem (C.), Woodstown (He.)
 (Wa.). *Mercer*—Groveville (C.).

New Castle—Speakman's, Tatnall; Point Lookout, Mount Cuba, *Commons*.

2. **ALLIUM CERNUUM** Roth. M. p. 263. Banks and hillsides. Summer.

Lancaster—York Furnace.

3. **ALLIUM VINEALE** L. M. p. 263. Moist meadows and fields. Early summer.

4. **ALLIUM CARINATUM** L. M. p. 1046. Fields.

Bucks—Greencble, N. B. Arnold (Fr.).

5. *ALLIUM CANADENSE* L. M. p. 263. Moist meadows and thickets. Spring.
Philadelphia—Byberry, Mart. (B. C.), Wissahickon (Gi.) (Je.), Germantown (Me.). *Bucks*—Sellersville (Fr.), Rock Hill (Fr.). *Delaware*—Lansdowne (Pe.), Valley of Darby Creek (B. Sm.), Chester (W. Tr.), Darby (Ws.). *Lancaster*—(P.). *Dauphin*—Steelton (Wn.).
Burlington—Medford (St.). *Camden*—Camden (C.). *Gloucester*—Near Mickleton (He.), Swedesboro (Li.), Westville (Mar.) (Wn.).
Mercer—Trenton (C.). *Middlesex*—Woodbridge (C.).

3. LILIUM L.

Flower or flowers erect; perianth-segments narrowed into long claws.

1. *L. Philadelphicum*.

Flowers drooping or spreading; perianth-segments not clawed.

Leaves finely roughened on the veins beneath. 2. *L. Canadense*.

Leaves perfectly smooth; perianth-segments recurved.

3. *L. superbum*.

1. *LILIUM PHILADELPHICUM* L. *Wood Lily*. M. p. 265. Dry woods and thickets. Summer.

Philadelphia—Chew's Wood (Je.). *Bucks*—Rock Hill (Fr.) (Ja.) (Mac.), Tullytown (Le.), Sellersville (Re.), Solebury Twp. (Ws.). *Montgomery*—Green Lane (Br.). *Delaware*—Williamson (Cr.) (Fu.) (Wn.), near Media (Sa.) (B. Sm.), Crum Creek (St.), Concord (W. Tr.). *Chester*—W. Bradford Twp. (St.). *Lancaster*—(P.). *Berks*—Hamburg (Br.) (He.). *Lehigh*—Lehigh Mountain (Kr.). *Northampton*—Pen Argyl (He.).

Gloucester—One plant near Mickleton (He.), Swedesboro (Li.). *Atlantic*—May's Landing (C.). *Monmouth*—Keyport (C.).

New Castle—Brandywine, etc. Not common.

2. *LILIUM CANADENSE* L. *Yellow Field Lily*. M. p. 265. Moist meadows and bogs. Summer.

3. *LILIUM SUPERBUM* L. *Turk's Cap*. M. p. 265. Rich low grounds. Summer.

Philadelphia—Byberry, Mart. (B. C.), Germantown, extinct(?) (Me.), Wissahickon (Re.). *Bucks*—Tullytown (Le.). *Montgomery*—Edge Hill (Je.), Frazer's Bog, Willow Grove (VP.), Hillside (Ws.). *Delaware*—Tinicum (Fu.) (B. Sm.), Concord (W. Tr.), Chad's Ford (Wn.). *Chester*—Nottingham Twp. (Pr.). *Lancaster*—Peach Bottom (Cr.). *Northampton*—(P.).

New Jersey—Common.

New Castle—Frequent south of Christiana Creek.

4. ERYTHRONIUM L.

1. *ERYTHRONIUM AMERICANUM* Ker. *Yellow Adder's Tongue*. M. p. 266. Moist woods and thickets. Spring.

5. TULIPA L. TULIP.

1. *TULIPA SYLVESTRIS* L. M. p. 1046. Meadows.

Philadelphia—Stenton (Br.). *Bucks*—Near Sellersville (Fr.). *Montgomery*—Lansdale (Fr.).

6. ORNITHOGALUM L. STAR-OF-BETHLEHEM.

Flowers corymbose, erect; pedicels long, slender. 1. *O. umbellatum*.
 Flowers racemose, drooping; pedicels very short, stout. 2. *O. nutans*.

1. ORNITHOGALUM UMBELLATUM L. M. p. 267. Escaped from gardens.
 Early summer.

2. ORNITHOGALUM NUTANS L. M. p. 267. Escaped from gardens. Spring.

7. MUSCARI Mill.

1. MUSCARI BOTRYOIDES (L.) Mill. *Grape Hyacinth*. M. p. 268. Escaped
 from gardens into copses and fence rows. Spring.

8. ALETRIS L.

1. ALETRIS FARINOSA L. *Colic-root*, *Star-grass*. M. p. 269. Dry, sandy
 soil. Early summer.

Philadelphia — Wissahickon, extinct(?) (Me.) (Re.). *Montgomery* —
 Willow Grove (Mac.). *Delaware* — Rhoads' Swamp (Fu.), Williamson
 (Le.), Lima (Ja.) (Wn.), Swarthmore (Sch.), Thatcher's Swamp, Aston
 (B. Sm.), Concord (W. Tr.). *Chester*—Oxford (Cr.), W. Bradford (St.).
New Jersey—Southern counties, frequent.
New Castle—Hand's, Clark's, etc.

9. YUCCA L.

1. YUCCA FILAMENTOSA L. *Adam's Needle*. M. p. 270. Escaped from
 cultivation. Summer.

Family 4. CONVALLARIACEAE Link. Lily-of-the-Valley Family.

Leaves reduced to scales; leaf-like branchlets filiform.

1. *Asparagus*.

Leaves broad; stems simple or somewhat branched.

Leaves alternate or basal.

Leaves basal; flowers umbelled or solitary.

2. *Clintonia*.

Leaves alternate (solitary in flowerless plants of No. 4).

Perianth-segments separate.

Perianth segments 6.

3. *Vagnera*.

Perianth segments 4.

4. *Unifolium*.

Perianth cylindric or oblong, 6-toothed.

5. *Salomonia*.

Leaves nearly basal; flowers racemed; perianth 6-toothed.

6. *Convallaria*.

Leaves in 1 or 2 whorls below the flower or flowers.

Leaves in 2 whorls; flowers umbelled.

7. *Medeola*.

Leaves in 1 whorl; flowers solitary.

8. *Trillium*.

1. ASPARAGUS L.

1. ASPARAGUS OFFICINALE L. *Garden Asparagus*. M. p. 270. Escaped
 from cultivation. Summer.

2. CLINTONIA Raf.

1. CLINTONIA BOREALIS (Ait.) Raf. M. p. 270. Cold, moist woods. Spring.
Lancaster—Paradise Valley (Sa.). *Lehigh*—Salsburg (Kr.).

3. VAGNERA Adans.

Flowers numerous, panicle.

1. *V. racemosa*.

Flowers few-several, racemose.

2. *V. stellata*.

1. *VAGNERA RACEMOSA* (L.) Morong. *False Spikenard*. M. p. 271. Moist woods and thickets. Early summer.
2. *VAGNERA STELLATA* (L.) Morong. M. p. 271. Moist banks. Spring.
Philadelphia — Bartram's Garden (Te.). *Bucks* — Sellersville (Fr.).
Chester — (P.). *Lancaster* — Lancaster, A. P. Garber (B. C.). *Lehigh* —
Lehigh Mountain (Kr.). *Northampton* — (P.).
Cape May — Wildwood (Cr.) (He.), Anglesea (Li.), Cape May Point
(Te.).

4. *UNIFOLIUM* Adans.

1. *UNIFOLIUM CANADENSE* (Desf.) Greene. *False Lily-of-the-Valley*. M. p. 271. Moist woods and thickets. Early summer.

5. *SALOMONIA* Heist. SOLOMON'S SEAL.

Leaves pubescent beneath; filaments filiform, roughened. 1. *S. biflora*.
Plant glabrous throughout; filaments smooth, somewhat flattened.

2. *S. commutata*.

1. *SALOMONIA BIFLORA* (Walt.) Britton. M. p. 273. Woods and thickets. Early summer.
2. *SALOMONIA COMMUTATA* (R. & S.) Britton. M. p. 273. Moist woods and thickets. Early summer.

6. *CONVALLARIA* L.

1. *CONVALLARIA MAJALIS* L. *Lily-of-the-Valley*. M. p. 273. Escaped from cultivation. Spring.

7. *MEDEOLA* L.

1. *MEDEOLA VIRGINIANA* L. *Indian Cucumber-root*. M. p. 274. Rich, damp woods. Spring.

8. *TRILLIUM* L. WAKE ROBIN.

Petals obovate or oblanceolate, 3-6 cm. long. 1. *T. grandiflorum*.
Petals ovate or lanceolate, 1-3 cm. long.

Peduncle 3-10 cm. long, erect or declined; petals spreading.

2. *T. erectum*.

Peduncle 3 cm. long or less, recurved beneath the leaves; petals recurved.

3. *T. cernuum*.

1. *TRILLIUM GRANDIFLORUM* (Michx.) Salisb. M. p. 275. Rich woods, also in cultivation. Spring.
Lancaster — Harris Station (Ca.), Fulton Twp. (Pr.). *Dauphin* — Steelton (Wn.).
2. *TRILLIUM ERECTUM* L. M. p. 275. Rich woods. Spring.
Bucks — Nockamixon (Fr.). *Chester* — Valley Forge (Cr.). *Lancaster* — York Furnace (Ja.) (Li.), hills opposite Marietta (Le.), Paradise Valley (Sa.).
Burlington — Bordentown (C.).
3. *TRILLIUM CERNUUM* L. M. p. 275. Rich woods. Spring.
Philadelphia — Wissahickon, Shawmont (Sa.), Fairmount Park (Te.) (Wn.). *Bucks* — Nockamixon (Cr.), Rock Hill (Fr.). *Montgomery* — Schuylkill River, Mart. (B. C.), Bryn Mawr (Ke.), Flat Rock Tunnel

(Te.). *Delaware*—Swarthmore (Pr.) (Ws.), Wawa (Sa.), Palmer's Mills, Upper Providence (B. Sm.), near Newtown (VP.), Chad's Ford (Wn.). *Chester*—Westtown, Upland (Le.), Valley Forge (Mac.). *Lancaster*—(P.). *Lehigh*—Lehigh Mountain (Kr.). *Northampton*—(P.).

Gloucester—Near Mickleton (He.), Swedesboro (Li.), Woodbury, Mullica Hill (C.). *Salem*—Woodstown, Swedes Bridge (Wa.). *Mercer*—Trenton (C.).

New Castle—General and frequent.

Family 5. **SMILACEAE** Vent. **Smilax** Family.

1. **SMILAX** L. GREEN BRIER, CAT-BRIER.

Stem annual, herbaceous, unarmed.

Leaves usually ovate, thin.

Leaves usually hastate, coriaceous.

Stem perennial, woody, usually armed with prickles.

Berries black or bluish-black.

Fruit ripening the first year.

Leaves glaucous.

Leaves green on both sides.

Leaves rounded or lanceolate, 5-nerved.

Leaves ovate, 7-nerved.

Leaves deltoid or deltoid-hastate, 5-7-nerved, often with 1 or 2 additional nerves on each side.

Fruit ripening the second year; leaves elliptic or lanceolate, evergreen.

Berries red.

1. *S. herbacea*.

2. *S. tamnifolia*.

3. *S. glauca*.

4. *S. rotundifolia*.

5. *S. hispida*.

6. *S. Bona-nox*.

7. *S. laurifolia*.

8. *S. Walteri*.

1. **SMILAX HERBACEA** L. *Carrion-flower*. M. p. 276. Woods and thickets. Spring.

2. **SMILAX TAMNIFOLIA** Michx. M. p. 276. Pine-barrens. Early summer. *Philadelphia*—Holmesburg Junction (Ws.). *Delaware*—Tinicum, Dr. Geo. Smith (Fu.) (B. Sm.).

New Jersey—Common.

New Castle—Townsend, Canby and Tatnall; Thompson's, Farnhurst, Pencader.

3. **SMILAX GLAUCA** Walt. M. p. 276. Dry thickets. Spring.

Bucks—Near Sellersville (Fr.). *Montgomery*—Shannonville (Cr.). *Delaware*—Tinicum (P.). *Chester*—(P.). *Lancaster*—(P.). *Northampton*—(P.).

Burlington—Atsion, Pemberton (Te.), Brown Mills (Wn.). *Camden*—Cedar Brook (Ke.) (Mac.). *Gloucester*—Common (He.), Washington Park (Ja.), Swedesboro (Li.). *Atlantic*—Egg Harbor (Pr.), Elwood (Te.), Absecon (Wn.).

New Castle—Frequent.

4. **SMILAX ROTUNDIFOLIA** L. *Common Green-brier, Horse-brier*. M. p. 277. Woods and thickets. Spring.

5. **SMILAX HISPIDA** Muhl. M. p. 277. Thickets. Early summer.

Bucks—Rock Hill (Fr.), Argus (Wn.). *Lancaster*—York Furnace (Cr.), Susquehanna opposite Marietta (Le.). *Northampton*—(P.).

New Castle—Near Will's Rock, Mount Cuba; not common.

6. **SMILAX BONA-NOX** L. M. p. 277. Thickets. Early summer.

Delaware—Tinicum, Dr. Geo. Smith (Fu.).

7. *SMILAX LAURIFOLIA* L. M. p. 277. Pine-barren thickets. Spring and summer.

Burlington—Quaker Bridge, Tuckerton, Speedwell (St.). *Atlantic*—Hammononton (Je.) (Ke.), Elwood (Te.). *Ocean*—Forked River, Toms River.

New Castle—Cedar Swamp, Collins, *Commons*.

8. *SMILAX WALTERI* Pursh. M. p. 277. Pine-barrens. Spring.

Burlington—Atsion (C.), Quaker Bridge. *Cumberland*—Vineland (Ab.). *Atlantic*—Landisville, May's Landing (C.), Egg Harbor (Sa.). *Cape May*—Cape May (C.).

Family 6. **HAEMODORACEAE** R. Br. **Bloodwort Family.**

1. *GYROTHECA* Salisb.

1. *GYROTHECA TINCTORIA* (Walt.) Salisb. *Red-root*. M. p. 278. Swamps near the coast. Summer.

Burlington—Quaker Bridge, *Dr. Geo. Smith* (Fu.), Atsion (Fr.), Hanover (Ja.), Ballinger's Mill (St.), Taunton (Sta.). *Camden*—Atco (Gi.), Cedar Brook (Ja.) (Mac.). *Atlantic*—Pleasant Mills, *Mart.* (B. C.), Hammononton (Cr.) (Ke.), May's Landing (Te.), Egg Harbor (VP.). *Ocean*—Near Island Heights (Ha.), Tuckerton (Le.), Manchester (Te.).

Family 7. **AMARYLLIDACEAE** Lindl. **Amaryllis Family.**

Bulbous herbs with flowers on scapes.

1. *Narcissus*.

Bulbous herbs, with rootstocks or corms.

Perianth adnate to the whole surface of the ovary; leaves mostly basal.

2. *Hypoxis*.

Perianth adnate only to the lower part of the ovary; stem leafy; flowers woolly.

3. *Lophiola*.

1. *NARCISSUS* L.

1. *NARCISSUS PSEUDO-NARCISSUS* L. *Daffodil*. M. p. 279. Escaped from cultivation. Spring.

2. *HYPOXIS* L.

1. *HYPOXIS HIRSUTA* (L.) Coville. *Star-grass*. M. p. 280. Dry soil. Spring and summer.

3. *LOPHIOLA* Ker.

1. *LOPHIOLA AMERICANA* (Pursh.) Coville. M. p. 281. Pine-barren bogs. Summer.

Burlington—Atsion, Brown Mills, Woodmansie (He.), Hanover (Ja.), Quaker Bridge (Pr.) (Te.), Jones Mill, Speedwell, Stafford Forge (St.). *Camden*—Berlin, Atco (Te.). *Atlantic*—Pleasant Mills, *Mart.* (B. C.), Hammononton (Cr.), Elwood (Te.). *Ocean*—Near Island Heights (Ha.), Forked River (Mac.), Waretown (Sta.), Manchester (Te.), Whiting, Forked River (Wn.).

Family 8. **DIOSCOREACEAE** Lindl. **Yam Family.**

1. *DIOSCOREA* L.

1. *DIOSCOREA VILLOSA* L. *Wild Yam-root*. M. p. 281. Thickets. Summer.

Family 9. **IRIDACEAE** Lindl. **Iris Family.**

Style-branches opposite the anthers very broad, petal-like. 1. *Iris*.

Style-branches alternate with the anthers, slender or filiform.

Filaments all distinct; seeds fleshy.

2. *Gemmingia*.

Filaments united; seeds dry.

3. *Sisyrinchium*.

1. **IRIS L. FLOWER-DE-LUCE.**

Stems tall, usually several-flowered, leafy; outer perianth segments larger than the inner.

Flowers blue, variegated with yellow, white or green (rarely all white).

Leaves 1-2.5 cm. wide.

1. *I. versicolor*.

Leaves much narrower, 4-8 mm. wide.

2. *I. prismatica*.

Flowers bright yellow; introduced species.

3. *I. Pseudacorus*.

Stems low, seldom over 1.5 dm. tall; 1-3-flowered; outer and inner perianth-segments nearly equal.

4. *I. verna*.

1. **IRIS VERSICOLOR L. Blue Flag.** M. p. 282. Wet places. Early summer.

2. **IRIS PRISMATICA Pursh. Blue Flag.** M. p. 283. Wet grounds. Spring.

Bucks—Tullytown (Cr.), Sellersville (Fr.). *Delaware*—Tinicum (Fu.) (St.), Williamson (Wn.). *Chester*—(P.). *Lancaster*—New Texas (P.).

New Jersey—Common.

New Castle—Frequent.

3. **IRIS PSEUDACORUS L. Yellow Flag.** M. p. 283. Escaped from cultivation. Early summer.

4. **IRIS VERNA L. Dwarf Iris.** M. p. 284. Wooded hillsides. Spring.

Lancaster—Wakefield (Ca.), Fulton Twp. (Pr.).

2. **GEMMINGIA Fabr.**

1. **GEMMINGIA CHINENSIS (L.) Kuntze. Blackberry Lily.** M. p. 284.

Escaped from gardens. Early summer.

3. **SISYRINCHIUM L. BLUE-EYED GRASS.**

Stems mostly simple with a sessile, terminal spathe.

Capsules 2-4 mm. long; leaf-blades mostly less than 1.5 mm. wide.

1. *S. mucronatum*.

Capsules 4-6 mm. long; leaf-blades mostly over 1.5 mm. wide.

2. *S. angustifolium*.

Stems mostly branched above, bearing two or more pedunculate spathes.

Plant usually turning dark in drying; stem broadly winged; pedicels spreading or recurved.

3. *S. graminoides*.

Plant not turning dark when dry; pedicels not recurved; spreading.

4. *S. Atlanticum*.

1. **SISYRINCHIUM MUCRONATUM Michx.** M. p. 286. Meadows and fields. Spring.

Bucks—Sellersville (Fr.).

2. **SISYRINCHIUM ANGUSTIFOLIUM Mill.** M. p. 286. Fields and hillsides. Spring.

3. **SISYRINCHIUM GRAMINOIDES Bicknell.** M. p. 287. Moist meadows among grass. Spring.

4. **SISYRINCHIUM ATLANTICUM Bicknell.** M. p. 287. Moist meadows along the coast. Spring.

Bucks—Tullytown (Fr.).

New Jersey—Common.

Order 7. ORCHIDALES.

Family 1. **ORCHIDACEAE** Lindl. **Orchid Family.**

Anthers 2; lip a large inflated sac.

1. *Cypripedium*.

Anther solitary.

Pollinia with a caudicle, which is attached at the base to a viscid disk or gland.

Glands enclosed in a pouch.

2. *Galeorchis*.

Glands not enclosed in a pouch.

Lip not fringed nor cut-toothed.

Valves of the anthers dilated at the base enclosing the glands below.

3. *Perularia*.

Valves not dilated at the base.

4. *Gymnadeniopsis*.

Lip fringed or parted and cut-toothed.

5. *Blephariglottis*.

Pollinia not produced into a caudicle (except apparently in No. 16).

Pollinia granulose and powdery.

Flowers comparatively large, solitary or few; anthers incumbent on a long column.

Leaves not grass-like; lip free.

Flowers terminal; lip crested.

Leaves alternate.

6. *Pogonia*.

Stem-leaves whorled.

7. *Isotria*.

Flowers axillary; lip not crested.

8. *Triphora*.

Leaves grass-like.

Flowers solitary, terminal; lip adherent to the base of the column.

9. *Arethusa*.

Flowers racemose; lip free.

10. *Limodorum*.

Flowers small, numerous, in spikes or racemes; anthers erect, jointed to a short column.

Leaves green, borne on the stem.

Leaves alternate; spike mostly twisted.

11. *Gyrostachys*.

Leaves 2, opposite; spike not twisted.

12. *Listera*.

Leaves white-reticulated, basal.

13. *Peranium*.

Pollinia smooth and waxy.

Plants with corms or solid bulbs, rarely with coralloid roots; leaves basal or cauline.

Leaves unfolding before or with the flowers.

Leaf cauline; lip ovate or auricled at the base.

14. *Achroanthos*.

Leaf or leaves basal.

15. *Leptorchis*.

Leaf 1, basal, unfolding after the flowering time.

Flowers long-spurred; lip 3-lobed.

16. *Tipularia*.

Flowers not spurred; lip 3-ridged.

17. *Aplectrum*.

Plants with coralloid roots, bulbless; the leaves reduced to scales.

18. *Corallorhiza*.

1. CYPRIPEDIUM L. LADY'S SLIPPER.

Plant 2-leaved; scape 1-flowered.

1. *C. acaule*.

Stem leafy to the top, 1-several-flowered.

Lip 3-5 cm. long, vertically flattened, pale yellow.

2. *C. hirsutum*.

Lip 1.5-3 cm. long, laterally flattened, bright yellow.

3. *C. parviflorum*.

1. CYPRIPEDIUM ACAULE Ait. *Moccasin Flower*. M. p. 291. Sandy or rocky woods. Spring.

Bucks—Tullytown (Br.), Durham, Buckingham Valley (Fr.). *Mont.*

gomery—Shannonville (Cr.), Bryn Mawr (Le.), Edge Hill (Re.), Glenside (Sa.), Willow Grove (U. C. S.). *Delaware*—Tinicum (Fu.) (Le.) (B. Sm.), Palmer's Mills, Upper Providence (B. Sm.), Haverford (W. Tr.). *Chester*—W. Bradford Twp., rare (St.). *Lancaster*—(P.). *Berks*—(P.). *Lehigh*—Lehigh Mountain (Kr.).

New Jersey—Rather general.

New Castle—Rogers', Dixon's, Batten's. Rare.

2. *CYPRIPEDIUM HIBSUTUM* Mill. M. p. 291. Rich woods. Early summer.
Philadelphia—Near Bustleton, Mart. (B. C.). *Bucks*—Argus (Fr.), Lower Black's Eddy (Ws.). *Montgomery*—Shannonville (Cr.), Uhl's Mill (Ja.) (Wn.). *Delaware*—Whiskey Run, Springfield (Fu.), Wawa (Ha.), Ridley Creek below Media (B. Sm.), near Swarthmore (Sts.), Concord (W. Tr.). *Chester*—Coatesville, H. E. Stone (B. C.), Oxford (Cr.), Falls of French Creek (Ke.) (Mac.). *Lancaster*—(P.). *Lehigh*—Salsburg (Kr.). *Northampton*—(P.).

Gloucester—Mullica Hill (C.), near Mickleton (Ha.), Washington Park (Ja.), near Swedesboro (Li.). *Monmouth*—Engelstown (C.).

New Castle—Dupont's, Faulkland, Mount Cuba. Rare.

3. *CYPRIPEDIUM PARVIFLORUM* Salisb. M. p. 291. Rich woods. Spring.
Bucks—Haycock (Fr.). *Chester*—Coatesville, H. E. Stone (B. C.) (Le.), near Laurel (St.). *Lancaster*—Pleasant Grove (Ca.). *Lehigh*—(P.). *Northampton*—(P.).
Monmouth—Keyport (C.).

2. GALEORCHIS Rydb.

1. *GALEORCHIS SPECTABILIS* (L.) Rydb. *Showy Orchis*. M. p. 292. Rich woods. Spring.

3. PERULARIA Lindl.

1. *PERULARIA FLAVA* (L.) Rydb. M. p. 292. Wet places. Early summer.
Bucks—Sellersville (Fr.), Nockamixon (Ws.). *Delaware*—Lansdowne, Dr. Emily G. Hunt (He.), Lima (Ja.) (Wn.), Tinicum (Le.) (St.) (VP.), Swarthmore (Pr.), Concord (W. Tr.). *Chester*—Westtown (Le.) (Sts.), north of Coatesville, H. E. Stone (St.). *Lancaster*—(P.). *Berks*—Hamburg (Cr.).

New Castle—Granogue. Rare.

4. GYMNANDENIOPSIS Rydb.

Spur filiform; lip entire; stem leafy. 1. *G. integra*.
 Spur clavate; lip 3-toothed; stem 1-2-leaved. 2. *G. clavellata*.

1. *GYMNANDENIOPSIS INTEGRATA* (Nutt.) Rydb. M. p. 293. Wet pine-barrens. Summer.

Burlington—Quaker Bridge (Re.).

2. *GYMNANDENIOPSIS CLAVELLATA* (Michx.) Rydb. M. p. 293. Wet woods. Summer.

5. BLEPHARIGLOTTIS Raf. FRINGED ORCHIS.

Lip not parted, pectinately fringed.

Spur half as long as the ovary; flowers yellow. 1. *B. cristata*.

Spur longer than the ovary.
Flowers bright yellow.
Flowers white.

2. *B. vittaria*.
3. *B. blephariglottis*.

Lip 3-parted.

Segments of the lip deeply fringed.

Segments narrow; fringe of a few threads. 4. *B. lacera*.

Segments broadly fan-shaped; fringe copious.

Raceme 4-5 cm. thick; lip 1-2 cm. broad. 5. *B. grandiflora*.

Raceme 1-3 cm. thick; lip 8-12 mm. broad. 6. *B. psychodes*.

Segments of the lip cut-toothed; flowers violet-purple.

7. *B. peramoena*.

1. *BLEPHARIGLOTTIS CRISTATA* (Michx.) Raf. M. p. 293. Bogs. Summer.
Bucks—Attleborough, Mart. (Fr.). *Montgomery*—Bog near Willow Grove (P.).

New Jersey—General.

New Castle—New Castle Road, Farnhurst. Rare.

2. *BLEPHARIGLOTTIS CILIARIS* (L.) Rydb. M. p. 296. Wet, sandy places. Summer.

Delaware—Burn Brae, Dr. Geo. Smith (Fu.), Rhoads' Swamp, Marple (B. Sm.), Aston (W. Tr.). *Chester*—Coatesville, H. E. Stone (B. C.). *Lancaster*—(P.). *Northampton*—(P.).

New Jersey—General.

New Castle—Hand's, Townsend, Pencader Station. Rare.

3. *BLEPHARIGLOTTIS BLEPHARIGLOTTIS* (Willd.) Rydb. M. p. 296. Peat bogs and borders of ponds. Summer.

New Jersey—General.

New Castle—Cedar Swamp. Very rare.

4. *BLEPHARIGLOTTIS LACERA* (Michx.) Rydb. M. p. 296. Bogs and moist thickets. Summer.

5. *BLEPHARIGLOTTIS GRANDIFLORA* (Bigel.) Rydb. M. p. 296. Wet meadows. Summer.

Delaware—Rhoads' Swamp, Marple (Fu.). *Chester*—W. Bradford Twp. (St.). *Lancaster*—York Furnace (Cr.). *Northampton*—(P.).

Gloucester—Near Mickleton (He.), near Swedesboro (Li.). *Mercer*—Trenton (C.). *Somerset*—Peapack (C.).

New Castle—Brandywine opposite Rockford, Folly Woods. Now rare.

6. *BLEPHARIGLOTTIS PSYCODES* (L.) Rydb. M. p. 296. Wet meadows and bogs. Summer.

Bucks—Point Pleasant (Fr.). *Delaware*—Aston (B. Sm.) (W. Tr.). *Chester*—Upland (Le.), Coatesville (St.). *Lancaster*—(P.). *Lehigh*—Lehigh (Kr.).

Camden—Near Camden, Mart. (B. C.). *Gloucester*—Near Mullica Hill (He.), Swedesboro (Li.).

New Castle—Dupont's, Centerville, Burris Run, Commons. Rare.

7. *BLEPHARIGLOTTIS PERAMOENA* (A. Gray) Rydb. M. p. 297. Moist meadows and banks. Summer.

Delaware—Rhoads' Swamp, Marple (B. Sm.). *Lancaster*—Pleasant Grove (Ca.), York Furnace (Le.), Fulton Twp. (Pr.), New Texas (P.).

Camden—Haddonfield (C.). *Monmouth*—Lawrenceville, Sharon (C.). *Mercer*—Edinburgh (C.).

New Castle—Meadows below Granogue, *Canby, Dr. Bullock.*

6. POGONIA Juss.

Sepals and petals nearly equal and alike; lip bearded. 1. *P. ophioglossoides*.
Sepals longer and narrower than the petals; lip not bearded.

2. *P. divaricata*.

1. POGONIA OPHIOGLOSSOIDES (L.) Ker. M. p. 297. Bogs. Summer.

Bucks—Rock Hill (Ja.) (Mar.). *Montgomery*—Edge Hill (Je.) (Re.),
Willow Grove (Mac.). *Delaware*—Tinicum, Concord (W. Tr.). *Chester*
—Coatesville, H. E. Stone (B. C.). *Lancaster*—Pleasant Grove (Ca.).
Berks—(P.). *Lehigh*—Black River (Kr.).

New Jersey—General.

New Castle—Not rare.

2. POGONIA DIVARICATA (L.) R. Br. M. p. 297. Swamps. Summer.

Burlington—Quaker Bridge, *Batsto* (C.).

7. ISOTRIA Raf.

Lip crested along a narrow line down the face; peduncle as long as the capsule or longer. 1. *I. verticillata*.

Lip crested over the whole face and lobes; peduncle shorter than the capsule. 2. *I. affinis*.

1. ISOTRIA VERTICILLATA (Willd.) Raf. M. p. 297. Moist woods. Spring.

Philadelphia—N. E. Philadelphia (Me.). *Bucks*—Andalusia, *Mart.* (B. C.), Tullytown (Cr.), Buckingham Valley (Ws.). *Montgomery*—Near Bryn Mawr (Le.), Edge Hill (Re.). *Delaware*—Tinicum (Fu.) (B. Sm.), Concord (W. Tr.). *Chester*—W. Bradford Twp. (St.). *Lancaster*—(P.).
Lehigh—Schaperal Woods (Her.). *Northampton*—(P.).

Burlington—Florence (C.). *Camden*—Camden, Haddonfield (C.), Ancora (Te.). *Gloucester*—Near Mickleton (Cr.) (He.), Wenonah (Gl.), Swedesboro (Li.), Clarksboro, Red Bank (C.). *Salem*—Salem (C.), Woodstown (Wa.). *Atlantic*—Hammonton (C.).

New Castle—Rogers, Farnhurst, Dixon's. Not very rare.

2. ISOTRIA AFFINIS (Austin) Rydb. M. p. 297. Low woods. Early summer.

Philadelphia—(P.). *Chester*—Two specimens collected in 1887 in North woods at Westtown; not since found (Le.). *Berks*—(P.).

8. TRIPHORA Nutt.

1. TRIPHORA TRIANTHOPORA (Sw.) Rydb. M. p. 298. Rich woods. Summer.

Philadelphia—N. E. Philadelphia (Me.). *Montgomery*—Near Ardmore (Le.). *Delaware*—Haverford, Dr. Geo. Smith (Fu.), Radnor (W. Tr.). *Chester*—Calm Meeting House (St.). *Lancaster*—(P.). *Lehigh*—(P.).
Northampton—(P.).

Salem—Road beyond Elmer (Wa.).

New Castle—Hockessin, Joshua Hoopes. Rare.

9. ARETHUSA L.

1. ARETHUSA BULBOSA L. M. p. 293. Bogs. Early summer.

Chester—(P.). *Lancaster*—(P.).

Burlington—Tuckerton (Cr.). *Gloucester*—Near Woodbury (He.).

(Li.). *Salem*—Daretown (Wa.). *Cape May*—Tuckahoe (Ja.) (Ke.), near Cape May, very common (St.). *Atlantic*—Pleasant Mills, *Mart.* (B. C.), Hammonton (Je.) (Re.) (Sa.), Egg Harbor (Pr.). *Ocean*—Forked River (Ja.) (Mac.), Toms River (Ke.), Point Pleasant, very common (St.), Whiting's (Wn.).

10. LIMODORUM L.

1. LIMODORUM TUBEROSUM L. *Calopogon*. M. p. 298. Bogs. Summer.
Montgomery—Willow Grove (Mac.), Edge Hill (Re.). *Delaware*—Rhoads' Swamp (Fu.), Tinicum, Dr. Geo. Smith (B. Sm.). *Chester*—Westtown (W. Tr.). *Lancaster*—Pleasant Grove (Ca.), in many places (Pr.). *Lehigh*—Salsburg (Kr.). *Northampton*—(P.).
New Jersey—General.
New Castle—Thompson's, Ashley, Ogletown, Batten's, Kiamensi. Not rare.

11. GYOSTACHYS Pers. LADIES' TRESSES.

- Flowers 3-ranked; stems not twisted, or but slightly so.
Spike short, about 5 cm. long, 8-10 mm. thick; callosities none, or mere thickenings of the basal margins of the lip. 1. *G. plantaginea*.
Spike 10-15 cm. long, 12-20 mm. thick; callosities nipple-shaped. 2. *G. cernua*.
- Flowers merely alternate, appearing secund from the spiral twisting of the stem.
Stem leafy; lower leaves elongated, mostly persistent through the flowering season. 3. *G. praecox*.
Stem a scaly scape; leaves basal, mostly withering before the flowering season.
Root a single tuber; spike about 2.5 cm. long. 4. *G. simplex*.
Root a cluster of tubers; spike 2-7 cm. long. 5. *G. gracilis*.
1. GYOSTACHYS PLANTAGINEA (Raf.) Britton. M. p. 300. Moist banks. Summer.
Bucks—Andalusia, *Mart.* (B. C.), Point Pleasant (Ws.). *Montgomery*—Shannonville (Cr.). *Lancaster*—(P.). *Northampton*—Near Easton, Porter (He.).
New Castle—Holly Oak, Commons and Canby; Pleasant Hill, Commons and Tatnall. Rare.
 2. GYOSTACHYS CERNUA (L.) Kuntze. M. p. 300. Wet places. Late summer and fall.
 3. GYOSTACHYS PRAECOX (Walt.) Kuntze. M. p. 300. Grassy places. Summer.
Delaware—Collingdale, H. C. Barker (B. C.), Swarthmore (Pr.). *Lancaster*—(P.).
Burlington—Quaker Bridge (C.), Brown Mills (Sts.). *Camden*—Clementon (Ja.). *Gloucester*—Near Mickleton (He.), Swedesboro (Li.). *Cape May*—Avalon (Ke.), Anglesea (Li.), Cape May (Sa.), Wildwood Beach (Wn.). *Atlantic*—Hammonton (Ja.), Absecon (U. C. S.).
New Castle—Collins, Canby, and frequent elsewhere.
 4. GYOSTACHYS SIMPLEX (A. Gray) Kuntze. M. p. 300. Dry, sandy soil. Late summer.
Bucks—Tullytown (Cr.), Penn Valley (Ja.). *Lancaster*—(P.).

Burlington—Wrightstown (C.), Atsion (Fr.). *Camden*—Longacoming, Camden (C.). *Gloucester*—Franklinville (C.), Swedesboro (Li.). *Cape May*—Cape May (Ja.). *Atlantic*—Hammonton (C.), Egg Harbor (Ha.) (Mac.) (Wn.).

New Castle—Mount Cuba, Serpentine, *Commons*; opposite Kentmere, Canby.

5. *GYROSTACHYS GRACILIS* (Bigel) Kuntze. M. p. 300. Dry fields and open woods. Late summer and fall.

12. *LISTERA* R. Br.

1. *LISTERA AUSTRALIS* Lindl. M. p. 302. Bogs. Spring.

Chester—Near Valley Hills (P.).

Camden—Camden (C.). *Middlesex*—New Brunswick (C.).

13. *PERAMIUM* Salisb.

1. *PERAMIUM PUBESCENS* (Willd.) MacM. *Rattlesnake Plantain*. M. p. 302. Dry woods. Late summer.

14. *ACHROANTHES* Raf.

4. *ACHROANTHES UNIFOLIA* (Michx.) Raf. *Adder's Mouth*. M. p. 303. Woods. Summer.

Philadelphia—Germantown (Me.). *Delaware*—Near Lima, Middletown, Dr. William Trimble (Fu.), Darby, Pusey's Woods, Dr. Geo. Smith (B. Sm.), Concord (W. Tr.). *Chester*—Uwchlan Twp. (Pr.), north of Coatesville (St.). *Lancaster*—Pleasant Grove (Ca.).

Gloucester—Swedesboro (Li.). *Atlantic*—Hammonton (Cr.). *Monmouth*—Red Bank, Keyport (C.). *Middlesex*—South Amboy, C. A. Boice (B. C.).

New Castle—Speakman's. Rare.

15. *LEPTORCHIS* Thouars. TWAYBLADE.

Raceme many-flowered; lip as long as the petals.

1. *L. liliifolia*.

Raceme few-flowered; lip shorter than the petals.

2. *L. Loeselii*.

1. *LEPTORCHIS LILIIFOLIA* (L.) Kuntze. M. p. 303. Moist woods. Summer.

Philadelphia—Wissahickon (Je.) (Re.) (Wn.), Shawmont (Sa.), Germantown, common (St.). *Bucks*—Rock Hill (Fr.), Argus (Ja.), Center Bridge (Sts.) (Ws.), Pineyville (Ws.). *Montgomery*—Shannonville (Cr.), Gulf Mills (Mar.), Sumneytown (VP.). *Delaware*—Middletown (Fu.), Wawa (Ja.), Media (Ke.) (Sa.) (Te.), Swarthmore (Pr.), Rhoads' Mills, Aston (B. Sm.), Chad's Ford (Te.) (Wn.), Concord (W. Tr.), near Newtown (VP.). *Chester*—Malvern (Le.). *Lancaster*—York Furnace (Cr.). *Berks*—Wernersville (Te.). *Lehigh*—Black River, Salsburg (Kr.). *Dauphin*—Rockville (Wn.). *Northampton*—(P.).

Burlington—Bordentown (C.), Oliphant's Mill (Wa.). *Camden*—Camden (C.). *Gloucester*—Near Mickleton (He.), Swedesboro (Li.). *Salem*—Auburn (C.), Riddleton (Wa.). *Ocean*—Manchester (C.).

New Castle—Mount Cuba (Ha.). General, not common.

2. *LEPTORCHIS LOESELII* (L.) MacM. M. p. 303. Wet thickets and springy banks. Early summer.

Bucks—Yardley (Fr.). *Delaware*—Springfield, John Rhoads' Farm, Dr. Smith (Fu.), Wawa (Ja.). *Chester*—Westtown (Cr.) (Ha.), Barren Ridge, Crawford (He.). *Lancaster*—York Furnace (Cr.). *Berks*—Near Reading (P.).

Burlington—Brown Mill, Hanover (C.), Medford (St.). *Camden*—Kirkwood (Mar.). *Gloucester*—Near Mickleton, a single plant (He.).

16. TIPULARIA Nutt.

1. TIPULARIA UNIFOLIA (Muhl.) B. S. P. *Crane-fly Orchis*. M. p. 304. Woods. Summer.

Delaware—Pusey's Woods, C. E. and A. H. Smith (Fu.), near Darby (P.).

Gloucester—Swedesboro (Li.). *Cape May*—Cape May (Cr.). *Monmouth*—Freehold (C.).

New Castle—Newark, Kilvington, Centerville, Tatums, Iron Hill, Commons. Rare.

17. APLECTRUM Nutt.

1. APLECTRUM SPICATUM (Walt.) B. S. P. *Putty-root, Adam-and-Eve*. M. p. 305. Woods in rich mould. Spring.

Philadelphia—Wissahickon (Je.) (Re.), Shawmont (Sa.). *Bucks*—Solebury Twp. (Ws.). *Montgomery*—Shannonville (Cr.). *Delaware*—Swarthmore (Fu.) (Sa.) (Ws.), Wawa, Chester Creek (Sch.), Valley of Darby Creek (B. Sm.), Concord (W. Tr.), Wallingford (Wn.). *Chester*—Westtown (Le.), Greentree (Te.). *Lancaster*—York Furnace (St.).

Gloucester—Swedesboro (Li.).

New Castle—Mount Cuba (Ja.), near Newark. In northern parts, but rare.

18. CORALLORHIZA R. Br. CORAL-ROOT.

Lip not deeply 3-lobed.

Lip 2-toothed or 2-lobed above the base.

Lip entire, or merely denticulate.

Flowers about 6-8 mm. long; lip not notched; column narrowly winged.

Flowers 14 mm. long; lip notched; column manifestly winged.

Lip deeply 3-lobed; flowers 12-18 mm. long.

1. *C. Corallorhiza*.

2. *C. odontorhiza*.

3. *C. Wisteriana*.

4. *C. multiflora*.

1. CORALLORHIZA CORALLORHIZA (L.) Karst. M. p. 305. Woods. Spring.

Delaware—Dr. Geo. Smith (B. Sm.). *Lancaster*—Millersville, Mart. (B. C.) (Ca.).

New Castle—Not common.

2. CORALLORHIZA ODONTORHIZA (Willd.) Nutt. M. p. 305. Woods. Summer.

Philadelphia—Wissahickon, Mart. (B. C.) (Re.). *Bucks*—Springfield (Fr.), Penn Valley (Ja.), Argus (Re.) (U. C. S.). *Montgomery*—Shannonville (Cr.), Ardmore (Le.), Schwenkville (U. C. S.). *Delaware*—Lansdowne (Pe.), Swarthmore (Pr.) (Ws.), Adele (Sa.), Concord (W. Tr.), Wallingford (Wn.). *Chester*—Valley Forge (Ja.), Paoli (U. C. S.), West Bradford Twp. (St.). *Lancaster*—York Furnace (Ja.) (Ke.). *Lehigh*—Woods near Deily's, Lehigh Mountain (Kr.). *Northampton*—(P.).

Camden—Camden (C.). *Gloucester*—Sewell, Mullica Hill (C.), near Mickleton (He.), Swedesboro (Li.). *Mercer*—Princeton, Trenton (C.).
New Castle—Mount Cuba (Le.). General, but not common.

3. *CORALLORHIZA WISTERIANA* Conrad. M. p. 305. Woods. Spring.
Philadelphia—Wissahickon (Re.). *Chester*—(P.). *Lancaster*—(P.).
4. *CORALLORHIZA MULTIFLORA* Nutt. M. p. 306. Woods. Summer.
Philadelphia—Wissahickon (Re.). *Bucks*—Durham (Fr.). *Montgomery*—Shannonville (Cr.), Bryn Mawr (Gi.), near Ardmore (Le.). *Delaware*—Swarthmore (Pr.), Concord (W. Tr.). *Chester*—(P.). *Lancaster*—York Furnace (Ja.) (Ke.) (Li.). *Berks*—Mount Neversink, Mart. (B. C.), Hamburg (Ke.). *Lehigh*—Woods near Geissinger's, E. A. Row (B. C.), Lehigh Mountain (Kr.).
Camden—Camden (C.). *Hunterdon*—Rosemont (C.).
New Castle—McCullough's, Canby.

Subclass 2. DICOTYLEDONES.

Series 1. CHORIPETALAE.

Order 1. PIPERALES.

Family 1. SAURURACEAE Lindl. Lizard's-tail Family.

1. SAURURUS L.

1. *SAURURUS CERNUUS* L. *Lizard's Tail*. M. p. 307. Swamps. Summer.

Order 2. SALICALES.

Family 1. SALICACEAE Lindl. Willow Family.

Bracts fimbriate or incised; stamens numerous.

1. *Populus*.

Bracts entire; stamens 2-10.

2. *Salix*.

1. POPULUS L.

Petioles terete or channelled, scarcely or not at all flattened laterally.

Leaves persistently and densely white-tomentose beneath, lobed or coarsely sinuate-dentate.

1. *P. alba*.

Leaves glabrous or nearly so when mature, crenate.

Foliage densely tomentose when young; capsule slender-pedicelled.

2. *P. heterophylla*.

Foliage not tomentose; capsule short-pedicelled.

3. *P. candidans*.

Petioles strongly flattened laterally.

Leaves broadly deltoid, abruptly acuminate.

Young leaves pubescent; capsule nearly sessile.

4. *P. nigra*.

Young leaves not pubescent; capsule slender-pedicelled.

5. *P. deltoides*.

Leaves broadly ovate or suborbicular.

Leaves coarsely sinuate-dentate.

6. *P. grandidentata*.

Leaves crenulate-denticulate.

7. *P. tremuloides*.

1. *POPULUS ALBA* L. *White Poplar*, *Abele*. M. p. 308. Occasionally spontaneous. Early spring.

2. *POPULUS HETEROPHYLLA* L. *Downy Poplar*. M. p. 308. Swamps. Early spring.
Delaware—(P.). *Chester*—(P.).
Cumberland—Fortescue Beach (C.).
New Castle—Hockessin, Tatnall; Townsend, Canby; Stanton, Canby; Harvey, Tatnall; Tatems. Rare.
3. *POPULUS CANDICANS* Ait. *Balm-of-Gilead*. M. p. 309. Escaped from cultivation. Early spring.
4. *POPULUS NIGRA* L. *Black Poplar*. M. p. 309. Valleys of rivers. Early spring.
Salem—Banks of Delaware (C.).
5. *POPULUS DELTOIDES* Marsh. *Cottonwood, Necklace Poplar*. M. p. 309. Moist soil, especially borders of streams. Early spring.
6. *POPULUS GRANDIDENTATA* Michx. *Large-toothed Aspen*. M. p. 310. Rich woods. Early spring.
Philadelphia—Haddington (Te.), Wissahickon (VP.). *Bucks*—Sellersville (Fr.), Rock Hill (Mac.). *Montgomery*—Edge Hill (VP.). *Delaware*—Marple, Dr. Geo. Smith (Fu.). *Chester*—Valley Forge (Cr.), Westtown (W. Tr.). *Lancaster*—(P.). *Berks*—Hamburg (Ke.). *Lehigh*—Coplay (Kr.). *Northampton*—(P.).
Burlington—Moorestown (C.). *Camden*—Ateo (C.). *Gloucester*—Mickleton (He.), Swedesboro (Li.). *Monmouth*—Holmdel (C.).
New Castle—Grant's, Tatnall; J. Mason's, Milltown.
7. *POPULUS TREMULOIDES* Michx. *American Aspen*. M. p. 310. Dry or moist soil. Early spring.
Philadelphia—(P.). *Bucks*—Near Sellersville (Fr.), Mechanicsville (Ws.). *Montgomery*—Shannonville (Cr.). *Delaware*—Valley of Darby Creek (B. Sm.), Concord (W. Tr.). *Chester*—Valley Forge (Cr.). *Lehigh*—Coplay (Kr.). *Northampton*—(P.).
New Jersey—Common (C.).
New Castle—Late H. Grant's, Greenbank, Commons.

2. *SALIX* L. *WILLOW, OSIER*.

Capsule glabrous, or slightly silky when young in No. 8.

Trees or larger shrubs with serrate, acute or acuminate leaves.

Stamens 3-7; filaments hairy at the base; bracts caducous, light yellow.

Pedicels slender, 3-5 times as long as the gland.

Petioles and stipules without glands. 1. *S. nigra*.

Petioles and stipules with prominent glands.

2. *S. lucida*.

Pedicels about twice as long as the gland. 3. *S. fragilis*.

Stamens 2.

Filaments hairy at the base; bracts caducous yellow.

Pedicels in fruit 1-3 mm. long.

Stigma sessile; leaves linear or lance-linear.

8. *S. fluviatilis*.

Style evident, but short; leaves lanceolate.

3. *S. fragilis*.

Pedicels in fruit less than 1 mm. long; stigma sessile.

Branches not drooping; leaves lanceolate.

4. *S. alba*.

- Branches drooping; leaves linear-lanceolate.
- Filaments glabrous; bracts persistent.
- Very low shrubs with serrate or crenate, obtuse leaves; filaments glabrous.
- Capsule silky or tomentose.
- Filaments distinct.
- Capsule distinctly pedicelled, rostrate; style none or short.
- Mature leaves not densely hairy beneath.
- Leaves linear or linear-lanceolate.
- Filaments hairy; capsule slightly silky when young, in age glabrate.
- Filaments glabrous; capsule permanently hairy.
- Leaves oblong, elliptic, or ovate-lanceolate.
- Bracts fuscous, obovate or cuneate, long-hairy.
- Bracts yellow, linear-oblong or lanceolate.
- Mature leaves densely white-hairy beneath.
- Leaves white-tomentose beneath.
- Leaves ovate-lanceolate, slender-petioled.
- Leaves oblanceolate, short-petioled.
- Leaves 5-10 cm. long; fruiting aments 2-3 cm. long.
- Leaves 2-4 cm. long; fruiting aments 1 cm. long.
- Leaves silvery-silky beneath.
- Capsule subsessile.
- Filaments united; pedicel and style none.
5. *S. Babylonica*.
6. *S. cordata*.
7. *S. myrtillofolia*.
8. *S. fluviatilis*.
9. *S. petiolaris*.
10. *S. discolor*.
11. *S. Bebbiana*.
11. *S. Bebbiana*.
12. *S. humilis*.
13. *S. tristis*.
14. *S. sericea*.
15. *S. viminalis*.
16. *S. purpurea*.
1. **SALIX NIGRA** Marsh. *Black Willow*. M. p. 312. Along streams. Spring.
Philadelphia—Byberry, Mart. (B. C.), 45th and Market streets (Mac.).
Bucks—Narrowsville (Mac.). *Delaware*—Darby Creek, Dr. Geo. Smith
(Fu.), Tinicum (B. Sm.), Concord (W. Tr.). *Chester*—(P.). *Lancaster*
—(P.). *Lehigh*—Along the Lehigh (Kr.). *Northampton*—(P.). *Dou-*
phin—(P.).
New Jersey—Common.
New Castle—Common.
- 1a. **SALIX NIGRA FALCATA** (Pursh.) Torr. M. p. 313. Along streams.
Spring.
Philadelphia—Byberry, Mart. (B. C.). *Bucks*—Sellersville (Fr.). *Del-*
aware—Darby Creek (Fu.).
New Castle—Not common.
2. **SALIX LUCIDA** Muhl. M. p. 313. Swamps and banks of streams. Spring.
Philadelphia—Nicetown (Le.). *Bucks*—Banks of Delaware, Mart. (B.
C.). *Chester*—(P.). *Lancaster*—(P.). *Lehigh*—Lowlands, Coplay (Kr.).
Northampton—Easton, Porter (B. C.).
Monmouth—Sandy Hook (Mac.).
New Castle—Cherry Island, Commons.
3. **SALIX FRAGILIS** L. *Crack Willow*. M. p. 313. Escaped from cultivation.
Spring.
4. **SALIX ALBA** L. *White Willow*. M. p. 313. Moist soil. Spring.
Philadelphia—Byberry, Mart. (B. C.), 46th and Chestnut streets

- (Mac.). *Bucks*—Sellersville (Fr.). *Delaware*—Upper Darby, cultivated (B. Sm.). *Chester*—(P.). *Lancaster*—(P.). *Northampton*—(P.).
New Jersey—Common.
- 4a. *SALIX ALBA VITELLINA* (L.) Koch. M. p. 314. Moist soil. Spring.
Philadelphia—Byberry, Mart. (B. C.). *Chester*—Valley Forge (Cr.).
New Castle—Rockland, Brinkle's.
5. *SALIX BABYLONICA* L. *Weeping Willow*. M. p. 314. In cultivation.
 Spring.
6. *SALIX COORDATA* Muhl. M. p. 314. Wet soil. Spring.
Bucks—Near Point Pleasant (Fr.). *Delaware*—Tinicum (Fu.) (B. Sm.), Folsom (Ws.). *Chester*—(P.). *Lancaster*—(P.). *Northampton*—(P.). *Dauphin*—(P.).
New Jersey—Frequent (C.).
New Castle—Delaware Junction, Rockland, Commons, Tatnall, Canby; Townsend.
- 6a. *SALIX COORDATA ANGUSTATA* (Pursh.) Anders. M. p. 314. Wet soil.
 Spring.
Lancaster—(P.).
7. *SALIX MYRTILLOIDES* L. M. p. 316. Bogs. Spring.
Lancaster—(P.).
8. *SALIX FLUVIATILIS* Nutt. M. p. 316. Along streams. Spring.
Bucks—Island of Delaware (Fr.). *Lancaster*—(P.). *Northampton*—Easton, Porter (B. C.). *Dauphin*—(P.).
New Castle—Hamburg Cove.
9. *SALIX PETIOLARIS* J. E. Smith. M. p. 316. Swamps. Spring.
Bucks—Near Sellersville (Fr.). *Delaware*—Middletown (B. Sm.).
Chester—Frazier (Fr.). *Lancaster*—(P.).
Camden—Kaighn's Point (C.). *Gloucester*—Swedesboro (Li.).
10. *SALIX DISCOLOR* Muhl. M. p. 316. Swamps and moist hillsides. Early spring.
Philadelphia—Stenton (Br), Shawmont (Le.). *Bucks*—Rock Hill (Fr.) (Mac.). *Delaware*—Concord (W. Tr.). *Chester*—(P.). *Lancaster*—(P.).
New Jersey—Common (C.).
New Castle—Frequent.
11. *SALIX BEBBIANA* Sarg. M. p. 317. Moist or dry soil. Spring.
Bucks—Perkasie (Fr.). *Delaware*—Wawa (Fu.), Folsom (Ws.).
Lehigh—Laurel Hill (Kr.). *Northampton*—Pen Argyl (He.) (Li.).
12. *SALIX HUMILIS* Marsh. M. p. 317. Dry soil. Spring.
Bucks—Near Sellersville (Fr.). *Delaware*—Haverford, Ridley Creek (Fu.), road above Llanerch (B. Sm.). *Lancaster*—(P.). *Northampton*—(P.).
New Jersey—Common.
13. *SALIX TRISTIS* Ait. M. p. 318. Dry soil. Early spring.
Philadelphia—West Philadelphia, MacElwee (U. C. S.). *Bucks*—Argus, Rock Hill (Fr.). *Delaware*—Barrens of Middletown, Chrome Run (B. Sm.), Concord (W. Tr.). *Chester*—(P.). *Lancaster*—(P.).

Camden — Gloucester (C.), Atco (Pr.). *Gloucester* — Near Mickleton, staminate plants only (He.), Swedesboro (Li.). *Salem* — Salem (C.). *Cumberland* — Bridgeton (C.). *Middlesex* — South Amboy, Morgan Station (C.).

New Castle — Iron Hill, etc. Not common. Mount Cuba, staminate plants, *Commons*.

14. *SALIX SERICEA* Marsh. M. p. 318. Swamps and along streams. Spring. *Philadelphia* — (P.). *Bucks* — Argus (Cr.), near Sellersville (Fr.). *Delaware* — Williamson (Le.), Valley of Darby Creek (B. Sm.). *Chester* — (P.). *Lancaster* — (P.). *Lehigh* — Catasauqua (Ca.). *Northampton* — (P.). *New Jersey* — Common (C.).

New Castle — Frequent.

15. *SALIX VIMINALIS* L. *Osier Willow*. M. p. 318. Escaped from cultivation. Spring.

Delaware — (P.).

16. *SALIX PURPUREA* L. M. p. 320. Escaped from cultivation. Spring. *Bucks* — Near Quakertown (Fr.). *Lancaster* — (P.). *Northampton* — (P.).

Middlesex — South Amboy (C.).

New Castle — Roadsides, Latrobe Feeder, *Commons* and *Tatnall*.

Order 3. MYRICALES.

Family 1. MYRICACEAE Dumort. Bayberry Family.

Ovary subtended by 2-4 bractlets; leaves serrate or entire, estipulate.

Ovary subtended by 8 linear, persistent bractlets; leaves pinnatifid, stipulate.

1. *Myrica*.

2. *Comptonia*.

1. MYRICA L.

1. *MYRICA CERIFERA* L. *Bayberry*, *Wax-myrtle*. M. p. 321. Sandy soil, especially near the coast. Spring.

Philadelphia — Willow Grove Avenue, Chestnut Hill (Je.). *Delaware* — Tinicum (B. Sm.). *Lehigh* — Salsburg (Kr.).

New Jersey — Common.

New Castle — Collins, Canby; Oldtown, *Commons*; Kiamensi, *Tatnall*.

2. COMPTONIA Banks.

1. *COMPTONIA PEREGRINA* (L.) Coulter. *Sweet Fern*. M. p. 321. Dry soil. Spring.

Order 4. JUGLANDALES.

Family 1. JUGLANDACEAE Lindl. Walnut Family.

Husk indehiscent; not rugose or sculptured.

1. *Juglans*.

Husk at length splitting into segments; nut smooth or angled.

2. *Hicoria*.

1. JUGLANS L.

Fruit globose, obtuse, not viscid; petioles puberulent.

1. *J. nigra*.

Fruit oblong, pointed, viscid; petioles pubescent.

2. *J. cinerea*.

1. *JUGLANS NIGRA* L. *Black Walnut*. M. p. 323. Rich woods. Spring.
2. *JUGLANS CINEREA* L. *Butternut, White Walnut*. M. p. 323. Rich or rocky woods. Spring.

2. *HICORIA* Raf.

Bud-scales valvate; lateral leaflets lanceolate or oblong-lanceolate, falcate.

1. *H. minima*.

Bud-scales imbricate; lateral leaflets not falcate.

Husk of the fruit freely splitting to the base; middle lobe of staminate calyx narrow, often at least twice as long as the lateral ones.

Bark shaggy, separating in long plates.

Leaflets 3-5 (rarely 7); nut rounded at the base, 1-2 cm. long.

2. *H. ovata*.

Leaflets 7-9; nut usually pointed at both ends, 2.5-3 cm. long.

3. *H. laciniosa*.

4. *H. alba*.

Bark close, rough; leaflets 7-9.

Husk of fruit thin, not freely splitting to the base; lobes of the staminate calyx mostly nearly equal.

Fruit nearly globular; nut thin-shelled; bark, at least that of old trees, separating in strips.

5. *H. microcarpa*.

Fruit obovoid; nut thick-shelled; bark close.

6. *H. glabra*.

1. *HICORIA MINIMA* (Marsh) Britton. *Bitter-nut, Swamp Hickory*. M. p. 324. Moist soil. Spring.
 2. *HICORIA OVATA* (Mill.) Britton. *Shell-bark, Shag-bark*. M. p. 324. Rich soil. Spring.
 3. *HICORIA LACINIOSA* (Michx.) Sarg. *Big Shell-bark, King-nut*. M. p. 324. Rich soil. Spring.
Philadelphia—(P.). *Bucks*—Rock Hill, Bedminster (Fr.), Sellersville (Mac.). *Montgomery*—Shannonville (Cr.). *Delaware*—Swarthmore, one tree (Pr.), Radnor, J. Evans (B. Sm.). *Lancaster*—(P.). *Berks*—(P.). *Mercer*—According to Mr. Chas. E. Smith a large tree at Borie station on P. R. R., 15 miles from Trenton (Ke.).
 4. *HICORIA ALBA* (L.) Britton. *Mocker-nut, White-heart Hickory*. M. p. 325. Rich soil. Early summer.
 5. *HICORIA MICROCARPA* (Nutt.) Britton. *Hickory*. M. p. 325. Rich woods. Spring.
 6. *HICORIA GLABRA* (Mill.) Britton. *Pig-nut Hickory*. M. p. 325. Dry hills and uplands. Early summer.
- HICORIA PECAN* (Marsh.) Britton. *Pecan*. M. p. 324. In cultivation. Spring.
Philadelphia—Bartram's Garden (Je.). *Delaware*—Concord (W. Tr.).

Order 5. FAGALES.

Both staminate and pistillate flowers in aments.

Pistillate flowers subtended by an involucre, which becomes a bur or a cup in fruit.

Fam. 1. *Betulaceae*.

Fam. 2. *Fagaceae*.

Family 1. **BETULACEAE** Agardh. Birch Family.

Staminate flowers solitary in the axil of each bract, destitute of a calyx; pistillate flowers with a calyx.

Staminate flowers with no bractlets; pistillate aments spike-like; nut small, subtended by or enclosed in a large bractlet.

Fruiting bractlet flat, 3-cleft and incised. 1. *Carpinus*.

Fruiting bractlet bladder-like, closed, membranous. 2. *Ostrya*.

Staminate flowers with 2 bractlets; pistillate flowers 2-4, capitate; nut large, enclosed by a leafy involucre. 3. *Corylus*.

Staminate flowers 3-6 together in the axil of each bract, with a calyx; pistillate flowers without a calyx.

Stamens 2; filaments 2-cleft, each fork bearing an anther-sac; fruiting bracts 3-lobed or entire, deciduous. 4. *Betula*.

Stamens 4; anther-sacs adnate; fruiting bracts woody, erose or 5-toothed, persistent. 5. *Alnus*.

1. **CARPINUS** L.

1. *CARPINUS CAROLINIANA* Walt. *American Hornbeam, Blue Beech, Water Beech*. M. p. 326. Along streams. Spring.

2. **OSTRYA** Scop.

1. *OSTRYA VIRGINIANA* (Mill.) Willd. *Hop-hornbeam, Ironwood, Leverwood*. M. p. 327. Dry woods. Spring.

Philadelphia — Wissahickon (Le.) (Me.). *Bucks* — Near Sellersville (Fr.), Narrowsville (Ja.), Rock Hill (Mac.), New Hope (Ws.). *Delaware* — Chester Valley (Le.), Radnor, J. Evans (B. Sm.), Kellyville (Te.), Chester (W. Tr.). *Chester* — Valley Forge (Cr.), Willistown Twp. one tree (Pr.). *Lancaster* — Paradise (St.). *Lehigh* — Jordan and Lehigh River, Salsburg (Kr.). *Northampton* — Easton, Porter (B. C.).

Hunterdon — Along the Delaware (C.). *Somerset* — Roxiteus (C.).

New Castle — Near Fish Ponds, Naaman's Creek.

3. **CORYLUS** L. FILBERT.

Involucre of 2 broad lacinate bractlets. 1. *C. Americana*.

Involucral bractlets united, prolonged into a tubular bristly beak. 2. *C. rostrata*.

1. *CORYLUS AMERICANA* Walt. *Wild Hazel-nut*. M. p. 327. Thickets. Early spring.

2. *CORYLUS ROSTRATA* Ait. *Beaked Hazel*. M. p. 327. Thickets. Spring.

Philadelphia — Wissahickon (Me.). *Bucks* — Rock Hill (Fr.). *Montgomery* — Schwenksville (U. C. S.). *Chester* — Valley Forge (Cr.) (W. Tr.), Coatesville, H. E. Stone (B. C.), Nottingham Twp. (Pr.). *Lancaster* — (P.). *Berks* — Hamburg. *Lehigh* — Low Hill (Kr.).

Hunterdon — Rosemont, Bloomsburg (C.).

New Castle — Rocky hillsides at High Bridge, N. side.

4. **BETULA** L.

Fruiting aments peduncled; bark chalky-white. 1. *B. populifolia*.

Fruiting aments peduncled; bark greenish-brown or brown. 2. *B. nigra*.

Fruiting aments sessile, at the ends of short branches; bark brown or yellowish.

Fruiting bracts 4 mm. long, lobed at the apex; leaves shining above.

3. *B. lenta*.

Fruiting bracts 8 mm. long, lobed to about the middle; leaves dull above.

4. *B. lutea*.

1. *BETULA POPULIFOLIA* Ait. *American White Birch, Gray Birch.* M. p. 328. Moist or dry soil. Spring.
2. *BETULA NIGRA* L. *River or Red Birch.* M. p. 328. Banks of streams. Spring.
3. *BETULA LENTA* L. *Cherry, Black or Sweet Birch.* M. p. 328. Rich woodlands. Spring.
4. *BETULA LUTEA* Michx. f. *Yellow or Gray Birch.* M. p. 329. Moist woodlands. Spring.
Lancaster—(P.). Lehigh—Lehigh Mountain (Kr.). Dauphin—(P.).

5. *ALNUS* Gaertn. ALDER.

1. *ALNUS RUGOSA* (Duroi) K. Koch. M. p. 330. Wet soil. Early spring.

Family 2. **FAGACEAE** Drude. **Beech Family.**

Staminate flowers capitate; nut sharply triangular.

1. *Fagus*.

Staminate flowers in slender aments; nut rounded or plano-convex.

Pistillate flowers 2-5 in each involucre; involucre becoming globose and very prickly in fruit, enclosing the nuts.

2. *Castanea*.

Pistillate flower 1 in each involucre; involucre of numerous scales forming a cup in fruit and subtending the acorn.

3. *Quercus*.

1. *FAGUS* L.

1. *FAGUS AMERICANA* Sweet. *Beech.* M. p. 331. Rich soil. Spring.

2. *CASTANEA* Adans.

Leaves green both sides; large trees.

1. *C. dentata*.

Leaves densely white-tomentose beneath; shrub or small tree.

2. *C. pumila*.

1. *CASTANEA DENTATA* (Marsh.) Borkh. *Chestnut.* M. p. 331. Rich soil. Early summer.

2. *CASTANEA PUMILA* (L.) Mill. *Chinquapin.* M. p. 332. Dry soil. Early summer.

Chester—(P.). Lancaster—Opposite York Furnace (St.). Dauphin—Steelton (Wn.).

Gloucester—Clarksboro (C.), near Mickleton (He.), Swedesboro (Li.), Tomlin (Wn.), Salem—Jericho (C.), Penn Grove (Wa.). Mercer—Trenton, White Horse, Mercerville (C.).

New Castle—Newark, J. Webb; Middletown, J. A. Hunter; St. George's, Tatnall. Scarce.

3. *QUERCUS* L.

A. Leaves or their lobes bristle-tipped, deciduous; acorn maturing in autumn of second year.

Leaves pinnatifid or pinnately lobed.

Leaves green on both sides.

Cup of the acorn saucer-shaped, much broader than high.

Cup 16-25 mm. broad, acorn ovoid; leaves dull.

1. *Q. rubra*.

Cup 8-16 mm. broad; leaves shining.

2. *Q. palustris*.

- Cup of the acorn turbinate or hemispheric.
 Inner bark gray to reddish; leaves deeply lobed.
 Leaves shining both sides, lobed to near the midrib. 3. *Q. coccinea*.
 Leaves dull and paler beneath; acorn ovoid. 4. *Q. borealis*.
 Inner bark orange. 5. *Q. velutina*.
 Leaves white or gray-tomentose beneath.
 Large trees; leaf-lobes lanceolate to linear-lanceolate, long. 6. *Q. digitata*.
 Shrub or low tree; leaf-lobes triangular-ovate, short. 7. *Q. nana*.
Leaves 3-5 lobed above the middle or entire, obovate or spatulate in outline.
 Leaves obovate, crenate, brown-floccose beneath. 8. *Q. Marylandica*.
 With characters intermediate between *Q. Marylandica* and *Phellos*. 9. *Q. Eudkini*.
 Leaves spatulate, glabrous both sides. 10. *Q. nigra*.
Leaves entire, oblong, lanceolate or linear-oblong.
 Leaves linear-oblong, green and glabrous on both sides. 11. *Q. Phellos*.
 With characters intermediate between *Q. rubra* and *Q. Phellos*. 12. *Q. heterophylla*.
 Leaves oblong or lanceolate, brown-tomentose beneath. 13. *Q. imbricaria*.
 B. *Leaves or their lobes not bristle-tipped, deciduous; acorns maturing in autumn of first year.*
Leaves pinnatifid or pinnately lobed.
 Mature leaves pale or glaucous and glabrous beneath; cup shallow. 14. *Q. alba*.
 Mature leaves tomentulose beneath; cup one-third to fully as long as the acorn.
 Upper scales of the cup not awned.
 Leaves yellowish-brown tomentulose beneath; acorn ovoid. 15. *Q. minor*.
 Leaves white-tomentulose beneath; acorn depressed-globose. 16. *Q. lyrata*.
 Upper scales awned, forming a fringe around the acorn. 17. *Q. macrocarpa*.
Leaves crenate or dentate, not lobed.
 Fruit peduncled.
 Peduncle much longer than petioles; leaves white-tomentulose beneath. 18. *Q. platanoides*.
 Peduncle equalling or shorter than the petioles; leaves gray-tomentulose beneath.
 Bark white, flaky. 19. *Q. Michauxii*.
 Bark close. 20. *Q. Prinus*.
 Fruit sessile or nearly so.
 Tall trees. 21. *Q. acuminata*.
 Shrub or low tree; leaves oval or obovate. 22. *Q. prinoides*.
 1. *QUERCUS RUBRA* L. *Red Oak*. M. p. 333. Rich or poor soil. Early summer.
 2. *QUERCUS PALUSTRIS* Du Roi. *Swamp Oak, Pin Oak*. M. p. 333. Low ground. Early summer.
 3. *QUERCUS COCCINEA* Wang. *Scarlet Oak*. M. p. 333. Moist or dry soil. Early summer.

4. *QUERCUS BORNEALIS* Michx. *Gray Oak*. M. p. 334. Rich soil. Early summer.
New Castle—Dry woods opposite Kentmere.
5. *QUERCUS VELUTINA* Lam. *Quercitron*, *Yellow-barked* or *Black Oak*. M. p. 334. Dry or gravelly uplands. Early summer.
6. *QUERCUS DIGITATA* (Marsh.) Sudw. *Spanish Oak*. M. p. 334. Dry soil. Early summer.
Philadelphia—Byberry, *Mart.* (B. C.), Grays Ferry (Ha.), 52d Street Woods (Mac.), Lancaster Pike (Me.). *Delaware*—Providence (Fu.), Darby (Fu.) (Gi.) (Ws.), Swarthmore (Pr.), Fernwood (B. Sm.), Tinicum (St.), Chester (W. Tr.), Leiperville (Ws.). *Chester*—(P.).
New Jersey—Common in southern counties (C).
New Castle—General and common.
7. *QUERCUS NANA* (Marsh.) Sarg. *Bear* or *Black Scrub Oak*. M. p. 334. Sandy barrens and rocky hills. Spring.
8. *QUERCUS MARYLANDICA* Muench. *Black-Jack* or *Barren Oak*. M. p. 334. Dry sandy barrens. Early summer.
9. *QUERCUS RUDKINI* Britton. M. p. 334.
Bucks—Tullytown (Cr.).
Burlington—Birmingham (C.). *Gloucester*—Riddleton (C.). *Monmouth*—Middletown, Cliffwood, Keyport (C.).
10. *QUERCUS NIGRA* L. *Water Oak*. M. p. 335. Along streams and swamps. Spring.
Delaware—Chrome Run, Middletown (B. Sm.).
11. *QUERCUS PHellos* L. *Willow Oak*. M. p. 335. Bottomlands or rich sandy uplands. Spring.
12. *QUERCUS HETEROPHYLLA* Michx. *Bartram Oak*. M. p. 335. Moist woods. Early summer.
Philadelphia—Bartram's Garden (Cr.). *Bucks*—Tullytown (Cr.).
Burlington—Mount Holly (C.). *Camden*—Haddonfield (C.). *Gloucester*—Woodbury, Mickleton (C.). *Salem*—Riddleton (Br.), Penn Grove (C.). *Cumberland*—Fairton (C.). *Ocean*—New Egypt (C.).
New Castle—Townsend, Meehan; West Junction, Commons; Stanton, Battens, Tainall. Bare.
13. *QUERCUS IMBRICARIA* Michx. *Laurel* or *Shingle Oak*. M. p. 335. Rich woodlands, cultivated. Spring.
Philadelphia—Haddington (P.). *Lehigh*—Griesemer Farm w. of Allentown (Kr.).
14. *QUERCUS ALBA* L. *White Oak*. M. p. 335. All soils. Late spring.
15. *QUERCUS MINOR* (Marsh.) Sarg. *Post* or *Iron Oak*. M. p. 335. Sandy or sterile soil. Late spring.
16. *QUERCUS LYRATA* Walt. *Overcup* or *Post Oak*. M. p. 336. River banks. Spring.
Philadelphia—Bartram's Garden, *Mart.* (B. C.), near Grays Ferry (Ha.).
Gloucester—Mickleton (He.). *Salem*—Riddleton (Cr.) (He.) (Li.).
Atlantic—Ventnor (Gi.).

17. *QUERCUS MACROCARPA* Michx. *Bur Oak, Mossy-cup Oak*. M. p. 336.
 Rich soil, cultivated. Spring.
Philadelphia—Bartram's Garden, Wissahickon (Je.). *Montgomery*—Cheltenham Hills (Te.). *Delaware*—Lansdowne (Pe.). *Northampton*—(P.). *Atlantic*—Ventnor (Gi.).
New Castle—One tree between Broome and Rodney streets near Lovering Avenue, *Canby*.
18. *QUERCUS PLATANOIDES* (Lam.) Sudw. *Swamp White Oak*. M. p. 336.
 Borders of streams and swamps. Spring.
Philadelphia—Washington Square (Je.). *Bucks*—Rock Hill (Fr.), Argus (Ke.). *Montgomery*—Shannonville (Cr.), Edge Hill (Ma.). *Delaware*—Concord (W. Tr.), Tinicum (B. Sm.). *Chester*—Willistown Twp. (Pr.), Pocopson (St.). *Lancaster*—York Furnace (Ke.). *Lehigh*—Salsburg (Kr.). *Northampton*—Easton, Porter (B. C.).
Burlington—Moorestown (Br.), Marleton (C.), Medford (St.). *Gloucester*—Near Mickleton (He.), Swedesboro (Li.). *Salem*—Riddleton (Wa.).
New Castle—Richardson's, Red Clay Creek. Scarce.
19. *QUERCUS MICHAUXII* Nutt. *Basket Oak, Cow Oak*. M. p. 336. Moist soil. Spring.
Burlington—Moorestown (Br.).
New Castle—J. Woodward's woods, *Commons*.
20. *QUERCUS PRINUS* L. *Rock Chestnut Oak*. M. p. 336. Rocky banks and hillsides. Spring.
21. *QUERCUS ACUMINATA* (Michx.) Houda. *Yellow Oak, Chestnut Oak*. M. p. 336. Dry soil, especially limestone ridges. Early summer.
Philadelphia—Center Wissahickon (Je.). *Bucks*—Near Sellersville (Fr.). *Chester*—Valley Forge (St.). *Lancaster*—(P.). *Northampton*—Easton, Porter (B. C.).
Gloucester—Mullica Hill (C.), near Mickleton (He.). *Cumberland*—Bridgeton (C.).
New Castle—Serpentine, Centerville, *Commons*; Brandywine Hills.
22. *QUERCUS PRINOIDES* Willd. *Scrub Chestnut Oak*. M. p. 336. Dry sandy or rocky soil. Spring.
Bucks—Nockamixon (Fr.). *Delaware*—Williamson (Ja.), Marple (B. Sm.), Castle Rock (VP.). *Chester*—Serpentine Barrens near Westtown (Le.). *Lancaster*—(P.).
Northampton—Easton, Porter (B. C.).
New Jersey—Common.
New Castle—Near Wooddale, Christiana. Rare.

Order 6. URTICALES.

- Fruit not an achene (except in *Humulus* and *Cannabis*): trees, shrubs, or herbs, ovule pendulous.
 Trees with alternate leaves, sap not milky. Fam. 1. *Ulmaceae*.
 Trees with alternate leaves and milky sap or opposite leaved herbs, or herbaceous vines. Fam. 2. *Moraceae*.
 Fruit an achene; herbs with small clustered greenish flowers; ovule erect or ascending. Fam. 3. *Urticaceae*.

Family 1. **ULMACEAE. Elm Family.**

Flowers borne in clusters on twigs of the preceding season; fruit a samara or nut-like.

1. *Ulmus*.

Flowers borne on twigs of the season, the pistillate mostly solitary; fruit a drupe.

2. *Celtis*.

1. **ULMUS.**

Leaves slightly rough above; samara densely ciliate.

1. *U. Americana*.

Leaves very rough above; samara not ciliate.

2. *U. fulva*.

1. **ULMUS AMERICANA L.** *American White Elm.* M. p. 338. Moist woods, especially along rivers in rich soil. Early spring.

2. **ULMUS FULVA Michx.** *Slippery or Red Elm.* M. p. 338. Woods. Early spring.

2. **CELTIS L.**

Leaves smooth above.

1. *C. occidentalis*.

Leaves scabrous above.

2. *C. crassifolia*.

1. **CELTIS OCCIDENTALIS L.** *Nettle-tree, Sugar-berry, Hackberry.* M. p. 339. Dry soil. Spring.

2. **CELTIS CRASSIFOLIA Lam.** *Hackberry.* M. p. 339. Dry soil. Spring.
Bucks—Sellersville (Fr.). Montgomery—Green Lane (Br.). Lancaster—(P.). Northampton—(P.). Dauphin—(P.).

Family 2. **MORACEAE. Mulberry Family.**

Trees or shrubs; stipules fugacious.

Staminate and pistillate flowers spiked; leaves dentate or lobed.

1. *Morus*.

Staminate flowers racemose or spiked; pistillate capitata.

Pistillate perianth deeply 4-cleft; leaves entire.

2. *Toxylon*.

Pistillate perianth 3-4 toothed; leaves various.

3. *Broussonetia*.

Erect or twining herbs; stipules persistent.

Twining vines; pistillate flowers in ament-like clusters.

4. *Humulus*.

Erect herb; pistillate flowers spicate.

5. *Cannabis*.

1. **MORUS.**

Leaves rough above, pubescent beneath; fruit purple, spikes 2-6 cm. long.

1. *M. rubra*.

Leaves smooth and glabrous, or very nearly so, fruit nearly white; spikes 1-1.5 cm. long.

2. *M. alba*.

1. **MORUS RUBRA L.** *Red Mulberry.* M. p. 340. Rich woods. Spring.

2. **MORUS ALBA L.** *White Mulberry.* M. p. 340. Spontaneous near houses. Spring.

2. **TOXYLON Raf.**

1. **TOXYLON POMIFERUM Raf.** *Osage orange.* M. p. 340. Planted for hedges and occasionally spontaneous. Spring.

3. **BROUSSONETIA L'Her.**

1. **BROUSSONETIA PAPIRIFERA (L.) Vent.** *Paper Mulberry.* M. p. 340. Escaped from cultivation. Spring.

4. HUMULUS L.

1. HUMULUS LUPULUS L. *Hop.* M. p. 341. Alluvial banks. Escaped from cultivation. Summer.

5. CANNABIS L.

1. CANNABIS SATIVA L. *Hemp.* M. p. 341. Waste places. Summer.

Family 3. URTICACEAE. Nettle Family.

Herbs with stinging hairs.

Leaves opposite; both kinds of flowers 4-parted; achene straight.

1. *Urtica*.

Leaves alternate; staminate flowers 5-parted; achene oblique.

2. *Urticastrum*.

Herbs without stinging hairs.

Flower-clusters paniced or spiked, not involucrate leaves mostly opposite.

Pistillate calyx 3-parted or of three sepals.

3. *Adicea*.

Pistillate calyx 2-4 toothed or entire.

4. *Boehmeria*.

Flower-clusters involucrate by leafy bracts; leaves alternate.

5. *Parietaria*.

1. URTICA L. NETTLE.

Perennials, 0.6-2.2 m. tall; flower clusters large, compound.

Leaves ovate, cordate at base.

1. *U. dioica*.

Leaves lacinate, rarely cordate.

2. *U. gracilis*.

Annuals 1.5-4 dm. tall, flower clusters small, oblong, rather dense.

3. *U. urens*.

1. URTICA DIOICA L. M. p. 342. Waste places and roadsides. Summer.

2. URTICA GRACILIS Ait. M. p. 342. Dry soil. Summer.

Bucks—Nockamixon (Fr.) (Ja.). *Montgomery*—Shannonville (Cr.).

Delaware—Haverford, Nitre Hall Mill Dam, Dr. Geo. Smith (Fu.), Lansdowne (Pe.), Swarthmore (Pr.), Wallingford (Wn.). *Lancaster*—Peach Bottom (Le.). *Northampton*—Easton, Porter (B. C.). *Dauphin*—Steelton (Wn.).

Burlington—Bordentown (Wn.). *Gloucester*—Swedesboro (Li.).

Mercer—Trenton (C.). *Hunterdon*—Booles Island, J. S. Moyer (B. C.).

3. URTICA URENS L. M. p. 342. Waste places. Summer.

Philadelphia—Wissahickon (Je.). *Montgomery*—Shannonville (Cr.).

Camden—Kaighns Point (Ja.). *Hunterdon*—Below Booles Island (C.).

2. URTICASTRUM Fabr.

1. URTICASTRUM DIVARICATUM (L.) Kuntze. *Wood Nettle*. M. p. 343.

Rich woods. Summer.

3. ADICEA Raf.

1. ADICEA FUMILA (L.) Raf. *Richweed*. M. p. 343. Cool and moist shaded places. Summer.

4. BOEHMERIA Jacq.

1. BOEHMERIA CYLINDRICA (L.) Willd. *False Nettle*. M. p. 343. Moist ground. Summer.

5. PARIETARIA L.

1. PARIETARIA PENNSYLVANICA Muhl. *Pellitory*. M. p. 343. Shaded rocky banks. Summer.

Bucks — Narrowsville (Br.), near Sellersville (Fr.). *Chester* — Phoenixville, Mart. (B. C.) (Sch.). *Lancaster* — York Furnace (Cr.) (Le.), near Safe Harbor (Wn.).
Monmouth — Sandy Hook (C.).

Order 7. SANTALALES.

Tree-parasites, with opposite leaves or scales; fruit a berry.

Fam. 1. *Loranthaceae*.

Root-parasites, leaves alternate; fruit a drupe.

Fam. 2. *Santalaceae*.

Family 1. LORANTHACEAE D. Don. Mistletoe Family.

1. PHORADENDRON Nutt.

1. PHORADENDRON FLAVESCENS (Pursh.) Nutt. *American Mistletoe*. M. p. 345. On various deciduous trees. Summer.

Delaware — Middletown, Darby, Dr. Geo. Smith (Fu.), near Elwyn (B. Sm.). *Chester* — (P.). *Lancaster* — (P.). *Berks* — Monocacy Junction (Ca.).

Burlington — New Lisbon (C.), Medford (Br.) (Re.). *Camden* — Clementon (Br.), Atco, Kaighns Point (C.). *Gloucester* — Near Mickleton (He.), Swadesboro (Li.), Woodbury (C.). *Salem* — Riddleton (Cr.), Bushtown (Wa.), Woodstown (C.). *Cumberland* — Vineland, Bridgeton (C.), near Millville (Le.). *Atlantic* — Hammonton, Landisville (C.), May's Landing (He.). *Ocean* — Near Lakewood (C.). *Monmouth* — Keyport (C.). *Mercer* — Hightstown (C.).

New Castle — Folly Woods, J. P. Richardson, Tatnall; Townsend, Canby.

Family 2. SANTALACEAE R. Br. Sandalwood Family.

1. COMANDRA Nutt.

1. COMANDRA UMBELLATA (L.) Nutt. *Bastard Toad-flax*. M. p. 345. Dry fields and thickets. Early summer.

Order 8. ARISTOLOCHIALES.

Family 1. ARISTOLOCHACEAE Blume. Birthwort Family.

Acaulescent herbs; perianth regular, persistent; filaments distinct.

1. *Asarum*.

Erect, leafy-stemmed herbs; perianth irregular; deciduous; anthers sessile.

2. *Aristolochia*.

1. ASARUM L. WILD GINGER.

Sepals lanceolate-acuminate, not reflexed, longer than the hypanthium.

1. *A. Canadense*.

Sepals triangular, merely acute, reflexed, about as long as the hypanthium.

2. *A. reflexum*.

1. ASARUM CANADENSE L. M. p. 348. Rich woods. Spring.

2. *ASARUM REFLEXUM* Bicknell. M. p. 349. Rich soil. Along streams. Spring.
Delaware—(P.). *Bucks*—Ridge Valley, Rock Hill (Fr.). *Lancaster*—(P.). *Northampton*—(P.).

2. ARISTOLOCHIA L.

1. *ARISTOLOCHIA SERPENTARIA* L. *Virginia Snakeroot*. M. p. 349. Dry woods. Summer.
 2. *ARISTOLOCHIA CLEMATITIS* L. *Birthwort*. M. p. 349. Escaped from cultivation. Summer.

Order 9. POLYGONALES.

Family 1. POLYGONACEAE. Buckwheat Family.

Stigmas tufted.

I. *Rumex*.

Stigmas capitate.

Pedicels mostly several together, achene much surpassing the calyx.

2. *Fagopyrum*.

Pedicels usually fascicled, achene mostly enclosed by the enlarged calyx.

3. *Polygonum*.

Pedicels solitary; leaves jointed at base.

4. *Polygonella*.

1. RUMEX L. SORREL. DOCK.

Leaves hastate; flowers dioecious, foliage acid, low species.

1. *R. Acetosella*.

Leaves not hastate; flowers perfect or polygamo-dioecious; foliage scarcely or not at all acid; tall species.

Leaves flat, bright or light green, or glaucescent.

Tubercles usually 3.

2. *R. verticillatus*.

Tubercle usually 1; pedicels equalling the wings.

3. *R. altissimus*.

Leaves wavy-margined or crisped, dark green, not glaucescent.

Wings entire, more or less undulate.

Lower leaves narrowed or acuminate at base. 4. *R. Britannica*.

Lower leaves narrowed or acuminate at base.

Tubercles mostly 3, pedicels long.

5. *R. crispus*.

Tubercle 1; inflorescence not leafy, pedicels short.

6. *R. sanguineus*.

Wings toothed or fringed.

Lower leaves cordate.

7. *R. obtusifolius*.

Lower leaves mostly narrowed at base.

8. *R. persicarioides*.

1. *RUMEX ACETOSELLA* L. *Field or Sheep Sorrel*. M. p. 354. Dry fields and hillsides. Summer.

2. *RUMEX VERTICILLATUS* L. *Swamp Dock*. M. p. 354. Swamps. Summer.
Delaware—Swarthmore (Ws.).

Burlington—Medford (St.). *Cape May*—Wildwood (Cr.) (Wn.), Anglesea (Ke.).

New Castle—Edgemoor, Canby; Cedar Swamp, Commons; Delaware City, etc.

3. *RUMEX ALTISSIMUS* Wood. M. p. 355. Moist grounds. Spring.
Lancaster—Safe Harbor (P.).

4. *RUMEX BRITANNICA* L. M. p. 356. Wet places. Summer.
Lancaster—York Furnace (Cr.) (Mac.).
Cape May—Anglesea (He.) (Li.). *Hunterdon*—Near Rosemont (C.).
5. *RUMEX CRISFUS* L. *Curled Dock*. M. p. 356. Cultivated and waste grounds. Summer.
6. *RUMEX SANGUINEUS* L. M. p. 356. Waste places. Summer.
Bucks—Near Sellersville (Fr.), Rockfield (P.). *Lehigh*—Saegersville (Kr.). *Camden*—Ancora (Gi.).
7. *RUMEX OBTUSIFOLIUS* L. *Bitter Dock*. M. p. 357. Waste places. Summer.
8. *RUMEX PERSICARIOIDES* L. *Golden Dock*. M. p. 357. Sandy shores. Summer.
Delaware—Along the Delaware, Dr. Geo. Smith (B. Sm.).
RUMEX CONGLOMERATUS Murr. Waste places. Summer.
Camden—Wharf at Camden (Li.).
RUMEX MARITIMUS L. *Golden Dock*.
Philadelphia—Old Navy Yard, I. Burk (He.). *Camden*—Ballast (C.). *Ocean and Monmouth*—Salt marshes (C.).

2. *FAGOPYRUM* L.

1. *FAGOPYRUM FAGOPYRUM* (L.) Karst. Buckwheat. M. p. 358. Waste places. Summer.

3. *POLYGONUM* L. SMARTWEED, KNOTWEED.

1. Flowers in terminal spike-like racemes; calyx 5-cleft or 5-parted; stem not twining.
Racemes solitary or 2; aquatic or swamp species; perennials.
Leaves oblong, elliptic, or elliptic-lanceolate, not acuminate.
Leaves ovate-lanceolate, or oblong-lanceolate, usually acuminate.
Racemes several or numerous; annuals or perennials mostly terrestrial.
Ocreae naked or ciliolate, their limbs not spreading.
Racemes drooping.
Achene ovoid; style 2-parted to near the base.
Achene broadly oblong-ovoid, style 2-cleft to below the middle.
Racemes erect.
Ocreae fringed with bristles, their limbs not spreading.
Racemes not interrupted, erect, achene lenticular or 3-angled.
Racemes not interrupted, drooping.
Racemes not interrupted, erect; achene always 3-angled.
Racemes interrupted, erect or drooping.
Achene granular and dull; racemes drooping.
Achene smooth, shining; racemes erect.
Ocreae fringed with bristles, their limbs normally spreading.
2. Flowers in long, naked, much-interrupted, spike-like racemes; calyx 4-parted.

1. *P. amphibium*.2. *P. emersum*.3. *P. incarnatum*.4. *P. lapathifolium*.5. *P. pennsylvanicum*.6. *P. persicaria*.7. *P. careyi*.8. *P. hydropiperoides*.9. *P. hydropiper*.10. *P. punctatum*.11. *P. orientale*.12. *P. virginicum*.

3. Flowers in axillary clusters; stems more or less wiry, not twining.
 Plant prostrate; achene invested by the calyx.
 Leaves mostly acute; style 3-parted to below the middle.
 Leaves mostly obtuse; style 3-parted to the base.
 Plants prostrate, achene protruding beyond the calyx.
 Plants erect or ascending, rather stout.
 Leaves oval, oblong, or obovate, persistent.
 Leaves narrowly lanceolate or linear-oblong, persistent.
 Plants strictly erect and very slender.
 4. Flowers in axillary and terminal clusters, racemes or panicle racemes; stems mostly twining.
 Stems twining; herbaceous vines.
 Outer segments of the calyx unchanged or keeled in fruit.
 Achene granular and dull, ocreae not bristly.
 Achene smooth and shining, ocreae bristly.
 Outer segments of the calyx conspicuously winged in fruit.
 Calyx wings not incised.
 Calyx wings incised.
 Stems stout, erect, tall; outer calyx-segments winged in fruit.
 5. Flowers in capitate clusters or racemes; stems climbing by recurved prickles.
 Leaves sagittate; achene 3-angled.
 Leaves halberd-shaped; achene lenticular.
13. *P. aviculare*.
 14. *P. littorale*.
 15. *P. maritimum*.
 16. *P. erectum*.
 17. *P. ramosissimum*.
 18. *P. tenue*.
 19. *P. Convolvulus*.
 20. *P. cilirostris*.
 21. *P. scandens*.
 22. *P. cristatum*.
 23. *P. Zuccarini*.
 24. *P. sagittatum*.
 25. *P. arifolium*.
1. POLYGONUM AMPHIBIUM L. M. p. 360. Ponds. Summer.
 Montgomery—Shannonville (Cr.). Lancaster—York Furnace (Cr.)
 (He.) (Li.). Northampton—(P.). Dauphin—Steelton (Wn.).
 Hunterdon—(C.).
 New Castle—Cherry Island, Holly Oak, Vandyke, etc.
 2. POLYGONUM EMERSUM (Michx.) Britton. M. p. 360. Swamps and moist soil. Summer.
 Bucks—Sellersville (Fr.). Delaware—Tinicum, T. C. Palmer (Fu.).
 Chester—(P.). Lancaster—(P.). Northampton—Easton, Porter (B. C.).
 Gloucester—Repaupo (He.). Mercer—Below Trenton (C.). Hunterdon—Bulls Island (C.).
 3. POLYGONUM INCARNATUM Ell. M. p. 360. Wet soil. Summer.
 Lancaster—(P.). Northampton—(P.). Dauphin—(P.).
 Camden—Banks of Delaware (C.).
 4. POLYGONUM LAPATHIFOLIUM L. M. p. 361. Waste places. Summer.
 Philadelphia—Fairmount Park (Ja.). Montgomery—Shannonville (Cr.).
 Delaware—Lansdowne (Gi.). Chester—West Chester (P.).
 Cape May—Anglesea (He.) (Li.)
 5. POLYGONUM PENNSYLVANICUM L. M. p. 361. Moist soil. Summer.
 6. POLYGONUM PERISCIARIA L. Lady's Thumb. M. p. 361. Waste places. Summer.
 7. POLYGONUM CAREYI Olney. M. p. 362. Marshes. Summer.
 Burlington—Pemberton (C.), Brown Mills (He.) (Li.). Camden—

- Winslow (C.). *Gloucester*—Mickleton (He.) (Li.) *Atlantic*—Hammon-
ton (Fr.), Egg Harbor (He.) (W. Tr.) (Wn.). *Ocean*—Manchester,
Toms River (C.). *Monmouth*—Ocean Grove (C.).
8. *POLYGONUM HYDROPIPEROIDES* Michx. *Mild Water-pepper*. M. p. 362.
Wet places. Summer.
9. *POLYGONUM HYDROPIPER* L. *Smartweed*. M. p. 362. Moist waste
places. Summer.
10. *POLYGONUM PUNCTATUM* Ell. *Water Smartweed*. M. p. 362. Wet
places. Summer.
11. *POLYGONUM ORIENTALE* L. *Prince's Feather*. M. p. 363. Escaped
from gardens into waste grounds. Late summer.
12. *POLYGONUM VIRGINIANUM* L. M. p. 363. Woods. Summer.
13. *POLYGONUM AVICULARE* L. *Door-weed*. M. p. 363. Yards and waste
ground. Summer.
14. *POLYGONUM LITTORALE* Link. M. p. 363. Waste places. Late summer.
Northampton—Easton, Porter (B. C.).
15. *POLYGONUM MARITIMUM* L. M. p. 364. Seacoast. Summer.
16. *POLYGONUM ERECTUM* L. M. p. 364. Moist or dry soil. Summer.
17. *POLYGONUM RAMOSISSIMUM* Michx. M. p. 364. Saline soil. Summer.
Cape May—Anglesea, Sea Isle (Li.), Cape May (U. C. S.). *Atlantic*
—Atlantic City (C.). *Monmouth*—Sandy Hook (C.). *Middlesex*—
Woodbridge (C.).
New Castle—Port Penn (Pr.), Collins Beach, Commons.
18. *POLYGONUM TENUE* Michx. M. p. 365. Dry soil. Summer.
19. *POLYGONUM CONVULVULUS* L. *Black Bindweed*. M. p. 365. Waste and
cultivated groups. Summer.
20. *POLYGONUM CILINODE* Michx. M. p. 365. Rocky places. Summer.
Bucks—Tullytown (Cr.). *Montgomery*—Shannonville (Cr.). *Berks*—
Hamburg (He.). *Lehigh*—Common. (Kr.). *Northampton*—Easton,
Porter (B. C.).
21. *POLYGONUM SCANDENS* L. *Climbing False Buckwheat*. M. p. 365.
Moist thickets. Summer.
22. *POLYGONUM CRISTATUM* Engelm. & Gray. M. p. 365. Sandy woods and
rocky banks. Summer.
Delaware—Castle Rock (P.).
23. *POLYGONUM ZUOCARINUM* Small. *Japanese Knotweed*. M. p. 366. Oc-
casionaly escaped from gardens. Summer.
Philadelphia—Fairmount Park (He.) (Ke.) 36th and Woodland
Avenue (Mac.). *Montgomery*—Shannonville (Cr.). *Bucks*—Penn Val-
ley (Fr.). *Delaware*—Lansdowne (Gi.) (Pe.).
Gloucester—Near Mickleton (He.).
New Castle—Gilpin Avenue and Jackson Street, Canby.
24. *POLYGONUM SAGITTATUM* L. *Arrow-leaved Tear-thumb*. M. p. 366.
Low grounds. Summer.
25. *POLYGONUM ARIFOLIUM* L. *Halberd-leaved Tear-thumb*. M. p. 366.
Low grounds. Summer.

4. POLYGONELLA Michx.

1. *POLYGONELLA ARTICULATA* (L.) Meish. M. p. 367. Sandy soil near the coast. Summer.

Order 10. CHENOPODIALES.

Fruit a utricle (see also last genera of Caryophyllaceae).

Flowers bractless, or, if bracted, the bracts not scarious; sepals green or greenish. Fam. 1. *Chenopodiaceae*.

Flowers bracted, the bracts, and also the sepals mostly scarious.

Fam. 2. *Amaranthaceae*.

Fruit fleshy, enclosing several carpels; a berry. Fam. 3. *Phytolaceaceae*.

Fruit an anthocarp, the persistent base of the corolla-like calyx enclosing a utricle. Fam. 4. *Nyctaginaceae*.

Fruit a capsule, dehiscent by valves, or teeth (utricular in *Anychia*, *Paronychia*, and *Scleranthus* of the Caryophyllaceae).

Capsule 2-several-celled; petals none. Fam. 5. *Aizoaceae*.

Capsule 1-celled; petals mostly present.

Sepals 2.

Fam. 6. *Portulacaceae*.

Sepals 5 or 4, distinct or united.

Fam. 7. *Caryophyllaceae*.

Family 1. CHENOPODIAEAE Dumort. Goosefoot Family.

Embryo annular or conduplicate, not spirally coiled; endosperm copious (except in *Salicornia*).

Leafy herbs; endosperm copious.

Flowers perfect or some of them pistillate; calyx herbaceous or fleshy.

Calyx herbaceous or but slightly fleshy in fruit; flowers in paniced spikes. 1. *Chenopodium*.

Fruiting calyx dry, strongly reticulated; leaves pinnatifid.

2. *Roussieva*.

Calyx very fleshy and bright red in fruit; flowers densely capitate. 3. *Blitum*.

Flowers monœcious or diœcious; calyx of pistillate flowers none; fruit enclosed by two bractlets. 4. *Atriplex*.

Leafless, fleshy herbs with opposite branches; endosperm none.

5. *Salicornia*.

Embryo spirally coiled; endosperm little or none.

Fruiting calyx wingless; leaves fleshy, not spiny. 6. *Dondia*.

Fruiting calyx bordered by a thin horizontal wing; leaves very spiny.

7. *Salsola*.

1. CHENOPODIUM L.*

Embryo a complete ring.

Leaves white-mealy on the lower surface.

Leaves or some of them sinuate-toothed or lobed.

Sepals strongly keeled in fruit. 1. *C. album*.

Sepals not keeled in fruit; stems decumbent...

2. *C. glaucum*.

Leaves mostly entire, narrowly linear or oblong.

3. *C. leptophyllum*.

Leaves green and glabrous or nearly so on both surfaces when mature.

Leaves oblong or ovate-oblong, entire.

4. *C. polyspermum*.

Leaves, at least the lower, sinuate, toothed or incised.

Stamens 5; calyx not fleshy.

Pericarp readily separable from the seed.

5. *C. Boscianum*.

Pericarp firmly attached to the seed.

Flower clusters, at least the upper, longer than the leaves.

- Leaves oblong, rhombic-ovate or lanceolate, narrowed at the base. 1a. *C. album viride*.
 Leaves triangular-ovate, truncate or subcordate at base. 6. *C. urbicum*.
 Spikes loosely paniced in the axils, the panicles shorter than the leaves. 7. *C. murale*.
 Stamens only 1 or 2; calyx slightly fleshy, red. 9. *C. rubrum*.
 Leaves very coarsely toothed. 8. *C. hybridum*.
 Embryo an incomplete ring.
 Leaves ovate or oblong, pinnately lobed; flowers in long loose panicles. 10. *C. Botrys*.
 Leaves lanceolate; flowers in continuous or interrupted spikes.
 Spikes borne in the axils of the numerous small upper leaves. 11. *C. ambrasioides*.
 Spikes in large commonly leafless terminal panicles. 12. *C. anthelminticum*.
1. CHENOPODIUM ALBUM L. *Goosefoot; Pigweed, Lamb's Quarters*. M. p. 369. Waste places. Summer.
Philadelphia—*West Philadelphia* (Mac.). *Lancaster*—(P.).
Northampton—*Easton, Porter* (B. C.).
Gloucester—*Swedesboro* (Li.).
 2. CHENOPODIUM GLAUCUM L. *Oak-leaved Goosefoot*. M. p. 369. Waste places. Summer.
Philadelphia—*Andalusia, Mart.* (B. C.), *Germantown* (Me.), *Philadelphia*, streets and lots (Pr.). *Bucks*—*Sellersville* (Fr.).
Camden—*Kaighns Point* (Te.). *Gloucester*—*Swedesboro* (Li.).
Salem—*Woodstown* (Wa.). *Atlantic*—*Atlantic City* (C.).
New Castle—*Holly Oak, Canby and Tatnall; Wilmington, Commons*.
 3. CHENOPODIUM LEPTOPHYLLUM (Moq.) Nutt. M. p. 369. Seacoast. Summer.
Bucks—*Bristol* (Fr.).
Cape May—*Avalon* (Le.). *Atlantic*—*Absecon, Atlantic City* (C.).
Monmouth—*Sandy Hook* (C.).
 4. CHENOPODIUM POLYSPERMUM L. M. p. 370. Waste places and ballast. Summer.
Philadelphia—*Ballast* (P.). *Bucks*—(P.).
Camden—*Kaighns Point, I. Burk* (He.) (Ja.). *Hunterdon*—*Lambertville* (C.).
 5. CHENOPODIUM BOSCIANUM Moq. M. p. 370. Woods. Summer.
Philadelphia—*Wissahickon* (Cr.). *Bucks*—*Narrowsville* (Ja.). *Lancaster*—(P.). *Berks*—(P.). *Northampton*—*Easton, Porter* (B. C.).
Cape May—*Five Mile Beach* (Le.). *Atlantic*—*Ventnor* (Gi.). *Hunterdon*—*Above Milford* (C.), *Clinton* (Te.).
 6. CHENOPODIUM URBICUM L. M. p. 370. Waste places. Summer.
Philadelphia—*Philadelphia Salt Works* (He.). *Bucks*—*Hilltown* (Fr.).
Camden—*Ballast* (C.). *Salem*—*Banks of Delaware* (C.).
New Castle—*Wilmington, streets*.

7. *CHENOPODIUM MURALE* L. M. p. 370. Waste places. Summer.
Bucks—Near Sellersville (Fr.). *Lancaster*—(P.). *Lehigh*—Coplay (Kr.). *Northampton*—Bethlehem, E. A. Rau (B. C.).
Burlington—Pemberton (C.). *Camden*—Kaighns Point, I. Burk (B. C.) (Ja.). *Gloucester*—Swedesboro (He.) (Li.).
8. *CHENOPODIUM HYBRIDUM* L. *Maple-leaved Goosefoot*. M. p. 370. Woods and thickets. Summer.
9. *CHENOPODIUM RUBRUM* L. *Sea Blite*. M. p. 370. Seacoast. Summer.
Camden—Ballast (He.). *Cape May*—Anglesea (Li.), Wildwood (Mac.), Cape May (Te.).
New Castle—E. side Christiana Creek, Commons and Tatnall; Delaware City.
10. *CHENOPODIUM BOTRYS* L. *Jerusalem Oak*, *Feather Geranium*. M. p. 371. Waste places. Summer.
11. *CHENOPODIUM AMBROSIODES* L. *Mexican Tea*. M. p. 371. Waste places. Autumn.
12. *CHENOPODIUM ANTHELMINTICUM* L. *Wormseed*. M. p. 371. Waste places. Autumn.

2. ROUBIEVA Moq.

1. *ROUBIEVA MULTIFIDA* (L.) Moq. M. p. 371. Waste places and ballast. Summer.
Philadelphia—Below Old Navy Yard, Mart. (B. C.).
Camden—Kaighns Point (Wn.).

3. BLITUM L.

1. *BLITUM CAPITATUM* L. *Strawberry Blite*. M. p. 372. In dry soil. Summer.
Lancaster—(P.). *Northampton*—(P.).

4. ATRIPLEX L. ORACHE.

Leaves hastate, ovate, rhombic-lanceolate or linear-lanceolate.

Plants green, glabrous or sparingly scurfy, not silvery; leaves slender-petioled.

Leaves lanceolate, several times longer than wide. 1. *A. patula*.

Leaves triangular-hastate, the lower only 1-2 times as long as wide.

2. *A. hastata*.

Plants very scurfy; leaves rhombic-ovate, short-petioled.

3. *A. rosea*.

Leaves oblong, densely silvery, entire, plant of sea-beaches.

4. *A. arenaria*.

1. *ATRIPLEX PATULA* L. M. p. 373. Waste places and ballast. Summer.
Philadelphia—Greenwich Point (Te.). *Bucks*—Sellersville (Fr.).
Delaware—Chester (W. Tr.).
Cape May—Cape May (Te.).
New Castle—Streets, wharves, and meadows.
2. *ATRIPLEX HASTATA* L. M. p. 373. Salt meadows and waste places. Autumn.
Philadelphia—Philadelphia, Dr. Geo. Smith (Fu.). *Bucks*—Sellersville (Fr.). *Delaware*—(P.). *Lehigh*—Coplay (Kr.). *Northampton*—Bethlehem, E. A. Rau (B. C.). *Dauphin*—(P.).

New Jersey—Common near the coast.

New Castle—Collins Beach, frequent.

3. *ATRIPLEX ROSEA* L. M. p. 373. Waste places and ballast. Autumn.
Camden—Ballast.

4. *ATRIPLEX ARENARIA* Nutt. M. p. 373. Sandy beaches along the coast.
Summer.

5. *SALICORNIA* L. GLASSWORT, SAMPHIRE.

Annuals; stem erect.

Scales very short, acute or blunt; spikes 2-3 mm. in diameter.

- Scales mucronate-tipped; spikes 4-6 mm. in diameter. 1. *S. herbacea*.
Perennial by a woody root-stock; stems trailing or decumbent. 2. *S. Bigelovii*.
3. *S. ambigua*.

1. *SALICORNIA HERBACEA* L. M. p. 375. Seacoast. Summer.
2. *SALICORNIA BIGELOVII* Torr. M. p. 375. Seacoast. Summer.
3. *SALICORNIA AMBIGUA* Michx. M. p. 375. Seacoast. Late summer.

6. *DONDIA* Adans.

1. *DONDIA AMERICANA* (Pers.) Britton. *Sea Blite*. M. p. 376. Seacoast.
Late summer.

Philadelphia—Ballast (P.).

New Jersey—Common on seacoast.

7. *SALSOLA* L.

Calyx coriaceous, not conspicuously veined; plant marine. 1. *S. Kali*.

Calyx membranous, very strongly veined; plant an inland weed.

2. *S. Tragus*.

1. *SALSOLA KALI* L. *Saltwort*. M. p. 377. Sandy sea-shores. Summer.

Philadelphia—Navy Yard, Porter (Ca.).

New Jersey—Common.

New Castle—Collins' Beach, Fort Delaware.

2. *SALSOLA TRAGUS* L. *Russian Thistle*. M. p. 377. Fields and waste
places. Summer.

Bucks—Telford (Fr.).

Family 2. **AMARANTHACEAE** J. St. Hil. **Amaranth Family.**

Calyx 5-parted or of 5 sepals.

1. *Amaranthus*.

Calyx of the pistillate flowers wanting.

2. *Aconida*

1. *AMARANTHUS* L. AMARANTH, PIGWEED.

Utricle circumsissile, the top falling away as a lid.

Flowers, at least the upper, in dense terminal spikes.

Axils not spine-bearing.

Spikes stout, 8-14 mm. thick.

Spikes slender, 4-6 mm. thick.

A pair of stout spines in each axil.

Flowers in small axillary clusters, mostly shorter than the leaves.

Plant prostrate; sepals 4 or 5.

Plant bushy-branched; sepals 3.

1. *A. retroflexus*.

2. *A. hybridus*.

3. *A. spinosus*.

4. *A. blitoides*.

5. *A. graecisans*.

Utricle indehiscent, membranous, coriaceous or fleshy.

Upper flowers in terminal, more or less elongated spikes.

6. *A. lividus*.

Flowers in small axillary clusters, shorter than the leaves.

7. *A. pumilus*.

1. *AMARANTHUS RETROFLEXUS* L. M. p. 378. Cultivated grounds. Autumn.

2. *AMARANTHUS HYBRIDUS* L. M. p. 378. Waste grounds. Autumn.

2a. *AMARANTHUS HYBRIDUS PANICULATUS* (L.) Uline & Bray. M. p. 378.
Waste grounds. Autumn.

3. *AMARANTHUS SPINOSUS* L. M. p. 378. Waste grounds. Summer.

4. *AMARANTHUS BLITOIDES* S. Wats. M. p. 378. Waste places. Summer
and fall.

Philadelphia—Ballast (P.). *Bucks*—Quakertown (Fr.).

Camden—Kaighn's Point (He.) (Wn.). *Middlesex*—New Brunswick
(He.).

New Castle—Fourth street below Clayton, Dupont.

5. *AMARANTHUS GRAECIZANS* L. *Tumble-weed*. M. p. 378. Waste grounds.
Summer.

6. *AMARANTHUS LIVIDUS* L. M. p. 379. Waste places. Summer.

Philadelphia—Ballast (P.).

7. *AMARANTHUS PUMILUS* Raf. M. p. 379. Sea-beaches. Summer.

Philadelphia—Ballast (P.).

Atlantic—Atlantic City (Pr.).

2. *ACNIDA* L.

1. *ACNIDA CANNABINA* L. *Water-hemp*. M. p. 380. Salt or brackish
marshes. Summer.

Family 3. *PHYTOLACCAEAE* Lindl. *Poke-weed Family*.

1. *PHYTOLACCA* L.

1. *PHYTOLACCA DECANDRA* L. *Poke-weed*. M. p. 381. Waste places, woods
and meadows. Summer.

Family 4. *NYCTAGINACEAE* Lindl. *Four-o'clock Family*.

Involucre of united bracts; pair of leaves equal.

1. *Allionia*.

Involucre of separate bracts; pair of leaves mostly unequal.

2. *Abronia*.

1. *ALLIONIA* Loeßl.

1. *ALLIONIA NYCTAGINEA* Michx. *Umbrella-wort*. M. p. 382. Introduced.
Summer.

Philadelphia—Wayne Junction P. & R. Railroad.

Mercer—Near Lawrence Station (Br.).

2. *ABRONIA* Juss.

1. *ABRONIA MICRANTHA* (Torr.) Choisy. M. p. 383. Introduced. Summer.
Cape May—Avalon (Ke.) (Le.).

Family 5. **AIZOACEAE** A. Br. **Carpet-weed Family.**

Fleshy sea-coast herbs; leaves opposite; capsule circumscissile. 1. *Sesuvium*.
 Not fleshy; leaves in our species verticillate; capsule 3-valved. 2. *Mollugo*.

1. **SESUVIUM** L.

1. *SESUVIUM MARITIMUM* (Walt.) B. S. P. *Sea Purslane*. M. p. 384.
 Sands of the seashore. Summer.

2. **MOLLUGO** L.

1. *MOLLUGO VERTICILLATA* L. *Carpet-weed*. M. p. 384. Waste places and
 cultivated grounds. Summer.

Family 6. **PORTULACACEAE** Reichenb. **Purslane Family.**

Calyx free from the ovary; capsule 3-valved.

Seeds numerous; stamens 10-30.

1. *Talinum*.

Seeds not more than 6; stamens 2-5.

2. *Claytonia*.

Calyx partly adnate to the ovary; capsule circumscissile.

3. *Portulaca*.

1. **TALINUM** Adans.

1. *TALINUM TERETIFOLIUM* Pursh. *Fame Flower*. M. p. 385. Serpentine
 barrens. Summer.

Delaware — Marple, Dr. Geo. Smith (B. Sm.). *Chester* — Westtown,
West Chester (Me.) (Pr.), *West Bradford Twp.* (St.). *Lancaster*—*New*
Texas (Ca.).

2. **CLAYTONIA** L.

1. *CLAYTONIA VIRGINICA* L. *Spring Beauty*. M. p. 385. Moist woods.
 Spring.

3. **PORTULACA** L.

Glabrous throughout; flowers small, yellow.

1. *P. oleracea*.

Pilose pubescent, especially in the axils.

2. *P. pilosa*.

1. *PORTULACA OLERACEA* L. *Purslane*. M. p. 386. Cultivated and waste
 grounds. Summer.

2. *PORTULACA PILOSA* L. M. p. 386. Ballast. Summer.
Camden—*Camden* (He.).

Family 7. **CARYOPHYLLACEAE** Reichenb. **Pink Family.**

*Calyx of united sepals, tubular or ovoid.

Calyx-ribs at least twice as many as the teeth, running both into the
 teeth and into the sinuses.

Styles 5, alternate with the foliaceous calyx-teeth. 1. *Agrostemma*.

Styles 3, rarely 4. 2. *Silene*.

Styles 5 and opposite the short calyx-teeth, capsule 1-celled to
 base. 3. *Lychnis*.

Calyx 5-ribbed, 5-nerved, or nerveless, or striate-nerved.

Petals appendaged at the base of the blade. 4. *Saponaria*.

Petals not appendaged at the base of the blade.

Calyx strongly 5-angled, not bracteolate. 5. *Vaccaria*.

Calyx terete or nearly so, subtended by bractlets. 6. *Dianthus*.

**Calyx of distinct sepals, or the sepals united only at the base.

Fruit a capsule, dehiscent by apical teeth or valves.

Styles separate to the base; stipules wanting.

Plants not fleshy; disk of the flower inconspicuous or none.

Petals deeply 2-cleft or 2-parted (rarely none).

Capsule ovoid or oblong, dehiscent by valves.

7. *Alsine*.

Capsule cylindric, commonly curved, dehiscent by teeth.

8. *Gerastium*.

Petals entire or emarginate (rarely none).

Capsule cylindric.

9. *Holosteum*.

Capsule ovoid or oblong.

Styles as many as the sepals.

10. *Saginu*.

Styles fewer than the sepals.

Seeds not appendaged by a strophiole.

11. *Arenaria*.

Seeds strophiolate.

12. *Moehringia*.

Plants fleshy, maritime, disk conspicuous, 8-10-lobed.

13. *Ammodonta*.

Styles separate to the base; stipules scarious.

Styles and capsule-valves 5.

14. *Spergula*.

Styles and capsule-valves 3.

15. *Tissa*.

Fruit an indehiscent or irregularly-bursting utricle or achene.

Leaves stipulate.

16. *Paronychia*.

Sepals awn-tipped.

17. *Anychia*.

Sepals awnless.

18. *Scleranthus*.

Leaves not stipulate.

1. AGROSTEMMA L.

1. AGROSTEMMA GITHAGO L. *Corn Cockle*. M. p. 388. In grain fields and waste places. Summer.

2. SILENE L. CATCHFLY, CAMPION.

Leaves, or some of them, verticillate in 4's.

1. *S. stellata*.

Leaves all opposite.

Calyx much inflated and bladdery.

Flowers few, leafy-bracted.

2. *S. alba*.

Flowers numerous, in leafless cymes.

3. *S. vulgaris*.

Calyx merely expanded by the ripening pod.

Flowers cymose or paniculate.

Day-blooming, flowers rarely white, mostly pink or red.

Perennials, more or less viscid-pubescent.

Petals 2-cleft, 2-lobed, or irregularly incised, scarlet or crimson.

4. *S. Virginica*.

Petals erose, entire or emarginate, pink.

5. *S. Caroliniana*.

Annuals, glutinous at or below the nodes.

Calyx ovoid.

6. *S. antirrhina*.

Calyx club-shaped; flowers large, cymose.

7. *S. Armeria*.

Night-blooming, flowers large, white.

8. *S. noctiflora*.

Flowers spicate or racemose, short-pedicelled.

Spike-like raceme simple; flowers small.

9. *S. Anglica*.

Raceme forked; flowers 12-16 mm. broad.

10. *S. dichotoma*.

1. SILENE STELLATA (L.) Ait. *Starry Campion*. M. p. 389. Woods. Summer.

2. SILENE ALBA Muhl. M. p. 389. Shaded or moist places. Summer.
Lancaster — Peach Bottom (Ca.) (Pr.), York Furnace (Cr.) (Le.),
mouth of Tucquan Creek (St.), Safe Harbor (W. Tr.).

3. *SILENE VULGARIS* (Moench.) Garcke. *Bladder Campion*. M. p. 389.
Ballast. Summer.
Philadelphia—Greenwich Point (Te.), Wayne Junction (Wn.). *Northampton*—(P.).
Camden—Kaighn's Point (He.) (Wn.). *Mercer*—Trenton (C.).
4. *SILENE VIRGINICA* L. *Fire Pink, Catchfly*. M. p. 390. Dry woods.
Summer.
Camden—Camden (C.). *Gloucester*—Woodbury (Gi.).
New Castle—Townsend, Dr. J. B. Brinton (He.), Thatcher's, Mount Cuba.
5. *SILENE CAROLINIANA* Walt. *Wild Pink*. M. p. 390. Dry sandy or rocky soil. Spring.
6. *SILENE ANTIRRHINA* L. *Sleepy Catchfly*. M. p. 390. Waste places and woods. Summer.
7. *SILENE ARMERIA* L. *Sweet William Catchfly*. M. p. 390. Escaped from gardens. Early summer.
8. *SILENE NOCTIFLORA* L. *Night-flowering Catchfly*. M. p. 391. Waste places. Summer.
9. *SILENE ANGLICA* L. M. p. 391. Ballast. Spring.
Philadelphia—Wayne Junction (Br.), Greenwich Point, I. Burk (He.).
Northampton—(P.).
Camden—Kaighn's Point, C. A. Boice (B. C.) (Ja.).
10. *SILENE DICHOTOMA* Ehrh. M. p. 391. Waste places. Summer.
Mercer—Trenton (C.).

3. LYCHNIS L.

Calyx-teeth not twisted; plants pubescent, glandular or glabrate.

Fruiting calyx much enlarged, ovoid or globose.

Flowers white or pink, opening in the evening.

Flowers red, opening in the morning.

Fruiting calyx campanulate or tubular.

Calyx-teeth twisted, plant white-woolly all over.

1. *L. alba*.

2. *L. dioica*.

3. *L. Flos-cuculi*.

4. *L. Coronaria*.

1. *LYCHNIS ALBA* Mill. *Evening Lychnis*. M. p. 392. Waste places and on ballast. Summer.
Philadelphia—Ballast, C. A. Boice (B. C.), Falls of Schuylkill (Pr.), Neck (VP.). *Bucks*—Doylestown, A. S. Martin; Sellersville (Fr.).
Delaware—Lansdowne (Pe.), Swarthmore (Pr.), Concord (W. Tr.).
Northampton—(P.).
Camden—Kaighn's Point, Ancora (Mar.) (Sch.). *Gloucester*—Swedesboro (Li.), National Park (VP.). *Monmouth*—Long Branch (C.).
Mercer—Trenton (C.).
New Castle—Pocopsin, T. F. Savery's, Gilpin Ave.
2. *LYCHNIS DIOICA* L. *Red Campion*. M. p. 392. Waste places and ballast. Summer.
Lancaster—Safe Harbor (P.).
Camden—Ballast (C.). *Mercer*—Pennington, Trenton (C.).
3. *LYCHNIS FLOS-CUCULI* L. *Cuckoo-flower, Ragged Robin*. M. p. 392.
Moist or marshy places. Summer.
Philadelphia—(P.). *Bucks*—Morrisville, Carversville (Wa.).

4. *LYCHNIS CORONARIA* (L.) Desr. *Rose Campion*. M. p. 392. Escaped from cultivation. Summer.

4. *SAPONARIA* L.

1. *SAPONARIA OFFICINALIS* L. *Soapwort, Bouncing Bet*. M. p. 393. Road-sides and waste places. Summer.

5. *VACCARIA* Medic.

1. *VACCARIA VACCARIA* (L.) Britton. *Cow-herb*. M. p. 394. Waste places and ballast. Summer.

Philadelphia—West Philadelphia, I. Burk (Fu.), Girard Point, Greenwich Point (Te.). *Bucks*—Sellersville (Fr.). *Northampton*—(P.).

Burlington—Pemberton (C.). *Camden*—Kaighn's Point. *Atlantic*—May's Landing (C.). *Mercer*—Trenton, Dr. Atkinson (Ws.). *Hunterdon*—Rosemont (C.).

New Castle—Centerville, Commons.

6. *DIANTHUS* L. PINK, CARNATION.

Annuals.

Bracts broad, scarious.

1. *D. prolifer*.

Bracts narrow, herbaceous, long-pointed.

2. *D. Armeria*.

Perennials.

3. *D. barbatus*.

1. *DIANTHUS PROLIFER* L. M. p. 394. Waste places and ballast. Summer.

Philadelphia—Gray's Ferry, Mart. (B. C.), Bartram's Garden (Cr.) (Te.), Wissahickon near Megargee's Mill (Je.).

2. *DIANTHUS ARMERIA* L. *Deptford Pink*. M. p. 394. Fields and road-sides. Summer.

3. *DIANTHUS BARBATUS* L. *Sweet William*. M. p. 394. Escaped from cultivation. Summer.

7. *ALSINE* L. CHICKWEED, STITCHWORT.

Styles 5; leaves ovate, 2-5 cm. long.

1. *A. aquatica*.

Styles 3, rarely 4.

Leaves broad, ovate, or ovate-oblong or oblong.

Plants glabrous, or with a few scattered hairs. 2. *A. uliginosa*.

Stems with 1 or 2 pubescent lines; petioles often ciliate.

Petals shorter than the calyx, lower leaves petioled.

3. *A. media*.

Petals longer than the calyx; lower leaves rarely petioled.

4. *A. pubera*.

Leaves narrow, linear, oblong, oblanceolate or spatulate.

Leaves linear, acute at each end; seeds smooth. 5. *A. longifolia*.

Leaves lanceolate, broadest below; seeds rough. 6. *A. graminea*.

1. *ALSINE AQUATICA* (L.) Britton. M. p. 395. Ballast. Summer.

Philadelphia—Ballast, C. A. Boice (B. C.), Fairmount Park (P.).

2. *ALSINE ULIGINOSA* (Murr.) Britton. *Bog Starwort*. M. p. 395. Cold brooks and springs. Summer.

3. *ALSINE MEDIA* L. *Common Chickweed*. M. p. 395. Cultivated grounds, meadows and woods. All year.

4. *ALSINE PUBERA* (Michx.) Britton. *Great Chickweed*. M. p. 395. Shaded rocks. Spring.

Philadelphia—Valleys of Schuylkill and Wissahickon (Br.). *Bucks*—Near Sellersville (Fr.). *Montgomery*—Valley of Schuylkill (Br.), Sumnertown (Ke.). *Delaware*—(P.). *Chester*—(P.). *Lancaster*—Peach Bottom, Haines' Station (Ca.).

5. *ALSINE LONGIFOLIA* (Muhl.) Britton. *Long-leaved Stitchwort*. M. p. 396. Low meadows and swamps. Spring.

6. *ALSINE GRAMINEA* (L.) Britton. Fields and roadsides. Spring.

Philadelphia—Shawmont (Sa.), Chestnut Hill (VP.). *Bucks*—Tullytown (Ja.). *Montgomery*—Ivy Rock (Le.), Arcola (Mar.). *Delaware*—Lansdowne (Pe.).

Burlington—Moorestown, Jos. Walton (He.).

8. *CERASTIUM* L. MOUSE-EAR CHICKWEED.

Petals equalling the sepals, or shorter.

Pedicels not longer than the sepals; flowers glomerate.

1. *C. viscosum*.

Pedicels at length longer than the sepals; flowers cymose.

Leaf-blades less than 4 mm. long; sepals 3-3.5 mm. long; capsules 5-7 mm. long.

2. *C. semidecandrum*.

Leaf-blades over 4 mm. long; sepals 5-6 mm. long; capsules 7-10 mm. long.

3. *C. vulgatum*.

Petals manifestly longer than the sepals (rarely wanting).

Annuals, viscid pubescent; flowers 4-6 mm. broad.

4. *C. longipedunculatum*.

Perennials, glabrous or pubescent; flowers 10-20 mm. broad.

5. *C. arvense*.

1. *CERASTIUM VISCOSUM* L. M. p. 397. Waste places and meadows. Spring.

2. *CERASTIUM SEMIDECANDRUM* L. M. p. 397. Dry sterile soil. Spring.

Lancaster—(P.).

Atlantic—May's Landing (C.).

3. *CERASTIUM VULGATUM* L. M. p. 397. Fields and copses. Summer.

4. *CERASTIUM LONGIPEDUNCULATUM* Muhl. M. p. 397. Moist, shaded places. Spring.

5. *CERASTIUM ARVENSE* L. M. p. 398. Dry and rocky places. Spring.

- 5a. *CERASTIUM ARVENSE OBLONGIFOLIUM* (Torr.) Holl. & Britton. M. p. 398. Rocky places. Spring.

Bucks—New Hope (Sts.). *Delaware*—Williamson (Cr.), Media (He.) (Sa.), barrens of Middletown (B. Sm.). *Chester*—Near Oxford, Porter (B. C.), Westtown (Ha.) (Le.). *Lancaster*—(P.). *Dauphin*—(P.).

- 5b. *CERASTIUM ARVENSE VELUTINUM* (Raf.) Britton. M. p. 398. Rocky places. Spring.

Delaware—Mineral Hill (He.), Cheyney (Ws.). *Chester*—(P.). *Lancaster*—New Texas (Ca.).

9. *HOLOSTEUM* L.

1. *HOLOSTEUM UMBELLATUM* L. M. p. 398. Fields and roadsides. Spring.

Lancaster—Lancaster, A. A. Heller (B. C.), Conestoga (Li.). *Dauphin*—Black Horse, Middletown (S. Tr.).

New Castle—Centerville, Commons; Newark, Canby; Mt. Cuba, Tatnall.

10. SAGINA L. PEARLWORT.

Parts of the flower in 4's (or some of the flowers in 5's).

Plant depressed, spreading, petals present.

Plant erect; petals very minute or none.

Parts of the flower in 5's.

1. *S. procumbens*.

2. *S. apetal.*

3. *S. decumbens*.

1. *SAGINA PROCUMBENS* L. M. p. 399. Moist places. Spring and summer.

Philadelphia—Streets and yards between paving bricks. *Northampton*—Streets of Bath (P.).

Camden—Streets and ballast, Camden (C.). *Monmouth*—Asbury Park (Te.). *Mercer*—Streets, Princeton (C.).

New Castle—Quarryville, Commons; Tenth street near Orange; side-yard, 1803 Market street, etc.

2. *SAGINA APETALA* Ard. M. p. 399. Dry soil. Early summer.

Bucks—Near Sellersville (Fr.). *Lancaster*—(P.).

Burlington—Hanover (C.). *Camden*—Ballast (C.).

3. *SAGINA DECUMBENS* (Ell.) T. & G. M. p. 399. Dry soil. Spring.

Burlington—Pemberton (Te.). *Camden*—Gloucester and ballast (C.).

Gloucester—Westville (Wn.). *Salem*—Mouth of Game Creek (C.). *Cape*

May—Wildwood (He.) (Li.). *Atlantic*—Egg Harbor, Dr. J. B. Brinton

(He.) (Sts.), Atlantic City, May's Landing (C.), Hammonton (W. Tr.).

Monmouth—Deal (C.).

- 3a. *SAGINA DECUMBENS SMITHII* (A. Gray) S. Watson. M. p. 399. Damp soil. Spring.

Atlantic—Atlantic City, Somers' Point (C.).

11. ARENARIA L. SANDWORT.

Valves of the capsule 2-cleft or 2-toothed, sometimes appearing as if double the number of styles.

1. *A. serpyllifolia*.

Valves of the capsule entire.

Leaves densely imbricated, pine-barren species.

2. *A. Caroliniana*.

Leaves fascicled in the axils.

3. *A. Michauxii*.

1. *ARENARIA SERPYLLIFOLIA* L. M. p. 400. Sandy waste places. Summer.

2. *ARENARIA CAROLINIANA* Walt. M. p. 401. Dry sand. Summer.

New Jersey—Common in pine-barrens.

3. *ARENARIA MICHAUXII* (Fenzl.) Hook. f. M. p. 401. Rocks and dry wooded banks. Summer.

Bucks—Near Point Pleasant (Fr.), Narrowsville (Li.), below Riegelsville (Wa.). *Montgomery*—Ivy Rock. *Chester*—West Chester, Mart. (B.

C.) (He.) (Pr.). *Lancaster*—(P.). *Northampton*—(P.).

New Castle—Serpentine, Christiana Hd., Commons.

12. MOEHRINGIA L.

1. *MOEHRINGIA LATERIFLORA* (L.) Fenzl. M. p. 402. Moist places. Summer.

Bucks—Rock Hill (Fr.). *Montgomery*—Bryn Mawr (Gi.). *Delaware*

—Near State Line (Ta.). *Chester*—(P.). *Lancaster*—(P.).

Camden—Lindenwold (VP.). *Cape May*—Anglesea, Dr. J. B. Brinton (He.). *Atlantic*—Atlantic City.

13. AMMODENIA J. G. Gmel.

1. AMMODENIA PEPILOIDES (L.) Rupr. *Sea-beach Sandwort*. M. p. 402. Sands of the seashore. Summer.

14. SPERGULA L.

1. SPERGULA ARVENSIS L. *Corn Spurrey*. M. p. 402. Fields and waste places. Summer.

15. TISSA Adans. SAND SPURREY.

Species of salt marshes or sea-beaches; leaves very fleshy. 1. *T. marina*.
Species mostly of dry, sandy soil; leaves scarcely fleshy. 2. *T. rubra*.

1. TISSA MARINA (L.) Britton. M. p. 403. Salt marshes. Summer.
New Jersey—Common.
New Castle—Deakynes, rare.
2. TISSA RUBRA (L.) Britton. M. p. 403. Waste places and roadsides; also seacoast.
Philadelphia—Navy Yard, Mart. (B. C.), streets of city. *Bucks*—Perkasie (Fr.). *Lancaster*—(P.). *Dauphin*—(P.).
Camden—Kaighn's Point (Te.). *Gloucester*—Mickleton (C.). *Cape May*—Sea Isle (Li.), Cape May Court-house (U. C. S.). *Atlantic*—Atlantic City. *Middlesex*—New Brunswick (C.).

16. PARONYCHIA Adans.

1. PARONYCHIA ARGYROCOMA (Michx.) Nutt. *Whitlow-wort*. M. p. 404. Rocks. Summer.
Philadelphia—Wissahickon (Je.). *Delaware*—Rockdale, Dr. Geo. Martin (Fu.) (B. Sm.). *Northampton*—Pen Argyle (U. C. S.).

17. ANYCHIA Michx.

- Pubescent; flowers sessile; stems mostly prostrate or ascending.
Glabrous or nearly so; flowers pedicelled; stems usually erect.
1. ANYCHIA DICHOTOMA Michx. M. p. 405. Open places and dry woods. Summer.
2. ANYCHIA CANADENSIS (L.) B. S. P. M. p. 405. Dry woodlands. Summer.

. 18. SCLERANTHUS L.

1. SCLERANTHUS ANNUUS L. *Knewel*. M. p. 405. Fields and waste places. Spring to autumn.

Order 11. RANALES.

Aquatic herbs; floating leaves peltate, or with a basal sinus.
Carpels 3 or more; petals large; floating leaves not dissected.
Fam. 1. *Nymphaeaceae*.

Pistil 1; petals none; leaves whorled, all submerged and dissected.

Fam. 2. *Ceratophyllaceae*.

Land or marsh plants (some *Ranunculaceae* aquatic).

Stamens numerous; sepals distinct; petals present (except in some *Ranunculaceae*).

Receptacle not hollow; leaves alternate (except in *Clematis*).

Flowers perfect (except in some species of *Clematis* and *Thalictrum*).

Fruit aggregate, cone-like; trees; sepals and petals in 3 series or more, of 3. Fam. 3. *Magnoliaceae*.

Fruit not aggregate; the carpels separate, at least when mature.

Anthers not opening by valves; pistils usually more than 1.

Sepals 3; petals 6; shrubs or trees.

Fam. 4. *Anonaceae*.

Sepals 3-15; petals (when present) about as many.

Fam. 5. *Ranunculaceae*.

Anthers opening by valves (except in *Podophyllum*); pistil 1.

Fam. 6. *Berberidaceae*.

Dioecious climbing vines with simple leaves; fruit drupaceous.

Fam. 7. *Menispermaceae*.

Receptacle hollow, enclosing the numerous pistils and achenes; opposite-leaved shrubs.

Fam. 8. *Calycanthaceae*.

Stamens 9-12, in 3 or 4 series of 3; anthers opening by valves; aromatic trees or shrubs with no petals, more or less united sepals, and 1 pistil.

Fam. 9. *Lauraceae*.

Family 1. **NYMPHAEACEAE** DC. **Water-lily Family.**

Sepals and petals 3; stamens 6, hypogynous; carpels distinct; ovules few.

Leaves dissected, excepting the small floating ones.

1. *Cabomba*.

Leaves peltate, entire, floating.

2. *Brasenia*.

Sepals 4-6; petals numerous or several, carpels united; ovules numerous.

Petals small or minute; stamens hypogynous.

3. *Nymphaea*.

Petals large, numerous, stamens epigynous.

4. *Castalia*.

Sepals 4-5; petals numerous; carpels distinct, immersed in the receptacle.

5. *Nelumbo*.

1. **CABOMBA** Aubl.

1. *CABOMBA CAROLINIANA* A. Gray. M. p. 406. Ponds and slow streams. Summer.

Camden—Timber Creek (Br.).

New Castle—Established in Fish Ponds.

2. **BRASENIA** Schreb.

1. *BRASENIA PURPUREA* (Michx.) Casp. *Water-shield*. M. p. 406. Ponds and slow streams. Summer.

3. **NYMPHAEA** L. **SPATTER-DOCK.**

Leaves 1-3 dm. long; stigma 12-24-rayed; petals truncate, fleshy.

1. *N. advena*.

Leaves 0.5-2.5 dm. long; stigma 7-10-rayed; petals spatulate, thin.

2. *N. variegata*.

1. *NYMPHAEA ADVENA* Soland. *Spatter Dock*. M. p. 407. Still or stagnant water. Summer.

2. *NYMPHAEA VARIEGATA* Engelm. M. p. 407. (N. Kalmiana.) Still or stagnant water. Summer.

Bucks—Warwick Twp. (B. C.), Tohickon (Fr.). *Lancaster*—Tucquan (Ca.), York Furnace (He.), Collins' Ferry (P.). *Lehigh*—Lehigh Gap (Kr.).

Burlington—Barrack Creek, Atsion (C.). *Camden*—Clementon (Wn.). *Atlantic*—May's Landing (Li.). *Mercer*—Trenton (Wn.).

4. *CASTALIA* Salisb. WATER-LILY.

1. *CASTALIA ODORATA* (Dryand) Woodv. & Wood. *Water-Lily*. M. p. 407. Ponds and slow streams. Summer.

- 1a. *CASTALIA ODORATA ROSEA* (Pursh.) Britton. M. p. 407. Ponds. Summer.

Salem—Woodstown (C.). *Ocean*—Manchester (C.).

5. *NELUMBO* Adans. SACRED BEAN.

Flowers pale yellow.

1. *N. lutea*.

Flowers pink or white.

2. *N. Nelumbo*.

1. *NELUMBO LUTEA* (Willd.) Pers. *American Lotus*. M. p. 408. Ponds and ditches. Summer.

Philadelphia—Schuylkill (Ca.). *Delaware*—Marcus Hook (B. Sm.).

Salem—Woodstown, Sharptown.

New Castle—Established in Fish Ponds.

2. *NELUMBO NELUMBO* (L.) Karst. *Indian Lotus*. M. p. 408. Ponds. Summer.

Burlington—Bordentown (!).

Family 2. **CERATOPHYLLACEAE** A. Gray.

1. *CERATOPHYLLUM* L.

1. *CERATOPHYLLUM DEMERSUM* L. *Hornwort*. M. p. 409. Slow streams and ponds. Summer.

Philadelphia—Byberry, Mart. (B. C.). *Bucks*—Penn Valley (Wn.).

Delaware—Concord (W. Tr.). *Chester*—(P.). *Lancaster*—Safe Harbor,

Dr. Geo. Smith (Fu.), York Furnace (Ke.) (U. C. S.). *Lehigh*—Lehigh

River, Hanover (Kr.). *Northampton*—(P.). *Dauphin*—(P.).

Camden—In Delaware (C.). *Gloucester*—Mullica Hill, Repaupo (C.),

Mickleton (He.), Swedesboro (Li.). *Mercer*—Trenton, Princeton (C.).

New Castle—Common.

Family 3. **MAGNOLIACEAE** J. St. Hil. **Magnolia Family.**

Anthers introrse; leaves entire or with 2 basal lobes.

1. *Magnolia*.

Anthers extrorse; leaves lobed or truncate.

2. *Liriodendron*.

1. *MAGNOLIA* L.

Leaves 2-5 dm. long, light green beneath; corolla higher than broad.

1. *M. tripetala*.

Leaves 0.7-1.5 dm. long, glaucous beneath; corolla broader than high.

2. *M. Virginiana*.

1. *MAGNOLIA TRIPETALA* L. *Umbrella-tree*. M. p. 409. Woods and in cultivation. Spring.

Philadelphia—Bartram's Garden, Zoölogical Garden, etc. *Lancaster*—Along Susquehanna (Ca.), York Furnace, Fites Eddy (Le.), Tucquan Creek (Pr.).

2. *MAGNOLIA VIRGINIANA* L. *Sweet Bay*. M. p. 409. Swamps. Early summer.

Philadelphia—Bartram's Garden (Pe.). *Bucks*—Tullytown (Cr.), near Bristol (Fr.). *Montgomery*—Willow Grove (Ja.) (Mac.). *Delaware*—Tinicum (Fu.) (B. Sm.) (S. Tr.), near Lazaretto (Pr.), Concord (W. Tr.). *Chester*—Bank of Octoraro Creek (Ca.). *Lancaster*—(P.).

New Jersey—Common.

New Castle—Common.

MAGNOLIA FRASERI Walt. M. p. 409. Cultivated. Spring.

MAGNOLIA MACROPHYLLA Michx. M. p. 409. Cultivated. Spring.

MAGNOLIA ACUMINATA L. *Cucumber-tree*. M. p. 410. Cultivated. Spring.

2. LIRIODENDRON L.

1. *LIRIODENDRON TULIPIFERA* L. *Tulip-tree*. M. p. 410. Rich soil. Early summer.

Family 4. ANONACEAE DC. Custard-apple Family.

1. ASIMINA Adans.

1. *ASIMINA TRILOBA* (L.) Dunal. *Papaw*. M. p. 410. Along streams. Spring.

Philadelphia—Bartram's Garden, Wissahickon and Schuylkill (Me.). *Bucks*—Rock Hill (Fr.). *Montgomery*—Above Manayunk (He.), Lafayette (Sa.) (Wn.), Flat Rock Tunnel (Te.). *Delaware*—Near Leedum's Mills, Marple, Dr. Geo. Smith; Glen Mills, Ivy Mills, W. S. Barker (Fu.), Swarthmore (Pe.), Concord (W. Tr.), Painter's Arboretum, Media (Ws.). *Chester*—French Creek (S. Tr.). *Lancaster*—York Furnace (Cr.) (Ke.) (Li.), Susquehanna Valley (Le.) (Pr.). *Berks*—Reading (Wn.). *Dauphin*—Rockville, Steelton (Wn.).

Atlantic—Thompsontown (C.). *Mercer*—On Crosswick's Creek (C.). *Hunterdon*—Ridges Island (C.).

New Castle—Jessups, Tatnall; Dupont's, Allapokas, Stanton, Faulkland, Ashland, etc.

Family 5. RANUNCULACEAE Juss. Crowfoot Family.

Carpels several-ovuled (1-2 ovules in Nos. 1 and 8); fruit a follicle or berry.

Flowers regular; leaves palmately nerved or palmately compound.

Petals wanting.

Carpels ripening into a head of red berries. 1. *Hydrastis*.

Carpels ripening into a head of dry follicles. 2. *Callitha*.

Petals present, narrow and small, linear, flat. 3. *Trollius*.

Petals present, narrow and small, tubular at least at the base.

Sepals persistent; stem tall, leafy. 4. *Helleborus*.

- Sepals deciduous; stem scape-like, bearing one leaf.
- Flowers regular; leaves ternately or pinnately compound or decompound.
- Petals not spurred.
- Low herbs with solitary or panicle flowers.
- Low shrub with racemose flowers.
- Tall, erect herbs with racemose flowers.
- Fruit berries.
- Fruit follicles.
- Petals prolonged backward into hollow spurs.
- Flowers irregular.
- Carpel 1-ovuled; fruit an achene.
- Flowers subtended by involucre remote from the calyx or close under it; sepals petal-like.
- Involucre remote from the calyx; styles short, subulate.
- Involucre of 3 simple sessile leaves close under the flower.
- Involucre of 3 compound sessile leaves; leaflets stalked; stigma sessile.
- Flowers not subtended by involucre.
- Leaves opposite; sepals petal-like.
- Petals wanting.
- Petals present, small, spatulate.
- Leaves alternate or basal.
- Petals present, bearing a nectariferous pit at the base of the blade.
- Achenes compressed, smooth, papillose or spiny; flowers yellow.
- Achenes transversely wrinkled; flowers white.
- Achenes swollen, smooth; sepals 3, petals mostly 8.
- Achenes compressed or terete, longitudinally nerved.
- Petals none; leaves ternately compound.
5. *Cammarum*.
6. *Coptis*.
7. *Xanthorrhiza*.
8. *Actaea*.
9. *Cimicifuga*.
10. *Aquilegia*.
11. *Delphinium*.
12. *Anemone*.
13. *Hepatica*.
14. *Syndesmon*.
15. *Clematis*.
16. *Atragene*.
17. *Ranunculus*.
18. *Batrachium*.
19. *Ficaria*.
20. *Oxygraphis*.
21. *Thalictrum*.

1. HYDRASTIS Ellis.

1. HYDRASTIS CANADENSIS L. *Golden Seal, Orange Root, Yellow Puccoon*.

M. p. 412. Rich woods. Spring.

Philadelphia—(P.). *Bucks*—Rock Hill (Cr.), near Quakertown (Fr.). *Montgomery*—Manayunk, Mart. (B. C.), Sumneytown (VP.). *Delaware*—Darby, Glen Mills, (Fu.), Concord (He.), Wawa, Upper Providence near Crum Creek (B. Sm.). *Chester*—Willistown Twp. (Pr.), Pocopsin (St.), Cheyney (Ws.). *Lancaster*—Peach Bottom (Ca.), York Furnace (Cr.) (Le.). *Lehigh*—Rockdale (Kr.).

New Castle—Mount Cuba (Ha.) (Ke.), Hoekessin, Michener; Ashland, Commons; Rockland, Tatnall and Commons; Yorklyn.

2. CALTHA L.

1. CALTHA PALUSTRIS L. *Marsh-marigold*. M. p. 412. Swamps and wet meadows. Spring.

Philadelphia—Byberry, Mart. (B. C.), Franklin Woods, Germantown (Me.). *Bucks*—Sellersville, common (Fr.), Rock Hill (Mac.), Bonair (Sa.), Haycock Mountain (Ws.). *Montgomery*—Bryn Mawr (Ke.), Cheltenham Hills (Te.). *Delaware*—Near Media (Fu.) (B. Sm.), Glen Mills

(Ha.), S. Essington (Le.), Chad's Ford (Te.), Concord (W. Tr.), near Castle Rock (VP.). *Chester*—Westtown (Le.), West Bradford Twp. (St.). *Lancaster*—(P.). *Northampton*—Pen Argyl (U. C. S.). *Lehigh*—Spring Valley, Lehigh Mountain (Kr.).

New Jersey—Frequent.

New Castle—Stanton, Harvey.

3. TROLLIUS L.

1. TROLLIUS LAXUS Salisb. *Globe-flower*. M. p. 413. Swamps. Spring.
Bucks—Springfield (Fr.). *Northampton*—Easton (Ca.), Upper Saucon near Bingen (Kr.).

4. HELLEBORUS L.

1. HELLEBORUS VIRIDIS L. *Green Hellebore*. M. p. 413. Waste places. Spring.
Bucks—Quakertown, Mart. (B. C.) (Cr.), Rock Hill (Fr.). *Montgomery*—Oaks Station, Perkiomen R. R. (Cr.). *Delaware*—Glen Mills (Ha.), near Marple (Pr.). *Lehigh*—Geese's old place, Salisbury Twp. (Kr.).

5. CAMMARUM Hill.

1. CAMMARUM HYEMALE (L.) Greene. *Winter Aconite*. M. p. 413. Early spring.
Philadelphia—Bartram's Garden, Haddington (Ws.). *Delaware*—Media (P.).

6. COPTIS Salisb.

1. COPTIS TRIFOLIA (L.) Salisb. *Gold-thread*. M. p. 413. Damp, mossy woods. Spring.
Lehigh—Near Trexlertown (Her.), Dorward Spring, Washington Twp. (Kr.). *Northampton*—(P.).
Mercer—Trenton (C.).

7. XANTHORRHIZA L'Her.

1. XANTHORRHIZA APHIFOLIA L'Her. *Shrub Yellow-root*. M. p. 414. Introduced. Spring.
Philadelphia—Bartram's Garden; reported at one time along Schuylkill near Woodlands (Ha.).

8. ACTAEA L.

Pedicels slender.

1. *A. rubra*.

Pedicels stout.

2. *A. alba*.

1. ACTAEA RUBRA (Ait.) Willd. *Red Baneberry*. M. p. 414. Rich woods. Spring.
Delaware—Wawa (Ja.). *Chester*—Valley Forge (Ja.).
Monmouth—Near Keyport, Cream Ridge (C.). *Mercer*—Princeton, Lawrenceville (C.).
2. ACTAEA ALBA (L.) Mill. *White Baneberry*. M. p. 415. Rich woods. Spring.

9. CIMICIFUGA L. BUGBANE.

1. CIMICIFUGA RACEMOSA (L.) Nutt. *Black Snakeroot*, *Black Cohosh*. M. p. 415. Rich woods. Summer.

10. AQUILEGIA L. COLUMBINE.

Spur of petals nearly straight; flowers scarlet, white, or in a variety of yellow.

1. *A. Canadensis*.

Spur incurved; flowers blue, white or purple.

2. *A. vulgaris*.

1. AQUILEGIA CANADENSIS L. M. p. 416. Rocks along larger water-courses. Spring.

2. AQUILEGIA VULGARIS L. *European Columbine*. M. p. 416. Escaped from gardens. Spring.

11. DELPHINIUM L. LARKSPUR.

Follicle glabrous.

1. *D. Consolida*.

Follicle pubescent.

2. *D. Ajacis*.

1. DELPHINIUM CONSOLIDA L. M. p. 416. Escaped from cultivation. Summer.

2. DELPHINIUM AJACIS L. M. p. 416. Escaped from gardens. Summer.

12. ANEMONE L.

Achenes densely woolly.

Flower greenish-white, 1.5-3 cm. wide; head of fruit oblong.

1. *A. Virginiana*.

Flower pure white, 3-5 cm. wide; head of fruit short-cylindric.

2. *A. riparia*.

Achenes pubescent, or nearly glabrous.

Leaves of the involucre sessile.

3. *A. Canadensis*.

Leaves of the involucre petioled.

4. *A. quinquefolia*.

1. ANEMONE VIRGINIANA L. M. p. 419. Woods and roadsides. Summer.

2. ANEMONE RIPARIA Fernald. M. p. 419. River banks. Summer.

Bucks—Point Pleasant (Fr.). *Northampton*—(P.).

3. ANEMONE CANADENSIS L. M. p. 419. Low grounds. Summer.

Bucks—Doylestown (Fr.). *Lancaster*—York Furnace (Le.). *Lehigh*—

Calypso Island (Kr.). *Dauphin*—Harrisburg, Steelton (Wn.).

Gloucester—Red Bank (C.).

4. ANEMONE QUINQUEFOLIA L. *Wind-flower*. M. p. 419. Low woods. Spring.

13. HEPATICA Scop.

1. HEPATICA HEPATICA (L.) Karst. *Liver-leaf*. M. p. 420. Woods. Early spring.

14. SYNDESMON Hoffmg.

1. SYNDESMON THALICTROIDES (L.) Hoffmg. *Rue Anemone*. M. p. 420. Rich woods. Spring.

15. CLEMATIS L.

Climbing vines; leaves pinnate or 3-foliolate.

Flowers panicle, numerous; filaments glabrous.

1. *C. Virginiana*.

Flowers solitary; filaments pubescent.

2. *C. Viorna*.

Erect or ascending perennial herbs; leaves simple or pinnate.

3. *C. ochroleuca*.

1. CLEMATIS VIRGINIANA L. *Virgin's Bower*. M. p. 421. River banks and along fences. Summer.

2. *CLEMATIS VIORNA* L. *Leatherflower*. M. p. 422. Rich soil. Early summer.
Chester—(P.). *Lancaster*—York Furnace (St.). *Berks*—*Monocacy* (Me.).
New Castle—Mount Cuba, Burris Run, Milltown, Commons; Ashland.
3. *CLEMATIS OCHROLEUCA* Ait. M. p. 422. Early summer.
Chester—London Grove (P.).

16. ATRAGENE L.

1. *ATRAGENE AMERICANA* Sims. *Purple Virgin's Bower*. M. p. 423. Rocky places. Early summer.
Bucks—Durham, Bedminster (Fr.), Point Pleasant and along Tobieson Creek (Ws.). *Montgomery*—Schwenksville (Cr.) (Ja.). *Chester*—French Creek Falls (Ja.) (Mac.). *Lancaster*—York Furnace (Cr.) (Le.) (Mac.), Fulton Twp. (Ca.), banks of Susquehanna (W. Tr.). *Lehigh*—Rockdale, Lehigh Gap (Kr.). *Northampton*—(P.). *Berks*—(P.).
Ocean—Point Pleasant (Sta.). *Somerset*—Peapack (C.). *Hunterdon*—On Delaware (C.).
New Castle—Mount Cuba (Cr.), above Wooddale, Commons.

17. RANUNCULUS L. BUTTERCUP, CROWFOOT.

- *Aquatic or creeping mud plants with palmately lobed, divided or dissected leaves.
 Achenes marginless, flowers 7-14 mm. broad. 1. *R. Purshii*.
 Achenes callous-margined. 2. *R. delphinifolius*.
- **Plants of swamps or muddy shores; leaves entire or denticulate.
 Annuals; achenes beakless; tipped with the persistent style-base. 3. *R. pusillus*.
 Perennials, rooting from the nodes; achenes beaked.
 Stems trailing; achenes minutely beaked. 4. *R. reptans*.
 Stems ascending or erect; achenes subulate beaked. 5. *R. obtusiusculus*.
- ***Terrestrial species with some or all of the leaves lobed or divided.
 1. Achenes smooth.
 Basal leaves, some or all of them, merely crenate.
 Basal leaves cordate; plant glabrous or nearly so. 6. *R. abortivus*.
 Basal leaves not cordate; plant villous. 7. *R. micranthus*.
 Leaves all lobed or divided.
 Plant glabrous; stem hollow; flowers very small. 8. *R. sceleratus*.
 Plants more or less pubescent.
 Beak of the achene strongly hooked; flowers 8-10 mm. wide. 9. *R. recurvatus*.
 Beak of the achene short.
 Erect plants naturalized in fields; flowers 25 mm. broad.
 Calyx spreading; roots fibrous. 10. *R. acris*.
 Calyx reflexed; stem bulbous-thickened at base. 11. *R. bulbosus*.
 Erect or ascending plants of moist soil; flowers 6-12 mm. broad. 12. *R. Pennsylvanicus*.
 Ascending and creeping by stolons; flowers 2.5 cm. broad. 13. *R. repens*.
 Beak of the achene long; stout or slender flowers 12-36 mm. broad.

- Beak stout, sword-shaped; roots slender; leaflets cuneate at base. 14. *E. septentrionalis*.
 Beak of achene slender, subulate; roots thickened.
 Leaf-segments broad, oblong or obovate. 15. *E. hispidus*.
 Leaf-segments narrow, linear-oblong. 16. *E. fascicularis*.
 2. Achenes with a few scattered papillae near the margins. 17. *E. parvulus*.
 3. Achenes muricate or spiny. 18. *E. arvensis*.
1. RANUNCULUS PURSHII Richards. M. p. 424. Moist soil. Summer.
Dauphin—(P.).
2. RANUNCULUS DELPHINIFOLIUS Torr. *Yellow Water Crowfoot*. M. p. 425.
 Ponds. Summer.
Monmouth—Freehold (C.).
New Castle—Near Ogletown, Tatnall; Townsend, Canby.
3. RANUNCULUS PUSILLUS Poir. M. p. 425. Wet places. Spring and summer.
Bucks—Near Quakertown (Fr.). *Chester*—(P.).
Burlington—Taunton, Moorestown (C.). *Camden*—Camden (C.).
Mercer—Princeton, Trenton (C.). *Middlesex*—Woodbridge, near Monmouth Junction (C.).
New Castle—Below Collins' Beach and Long Bridge, Canby; Ogletown, Tatnall and Commons.
4. RANUNCULUS REPTANS L. M. p. 425. Gravelly and sandy banks. Summer.
Bucks—Soliday's Island, Moyer (Fr.). *Lancaster*—Columbia (Ca.),
 Susquehanna banks, Little Washington (La.), York Furnace (Wn.).
Northampton—(P.). *Dauphin*—Harrisburg (Wn.).
5. RANUNCULUS OBTUSISQUOLUS Raf. M. p. 425. Marshes. Summer.
Bucks—Rock Hill (Fr.). *Delaware*—Tinicum, Dr. Geo. Smith (B. Sm.).
Chester—(P.). *Lancaster*—Reinholdsville (Ca.). *Berks*—Hamburg (Ke.).
Lehigh—Lowhill, Jordan Creek (Kr.). *Dauphin*—(P.).
Camden—Camden, Mart. (B. C.), Gloucester (Te.). *Gloucester*—Near Mickleton (He.), Swedesboro (Li.), Washington Park (Mac.), Repaupo (Sa.),
 Westville, Mantua Creek (Wn.). *Mercer*—Trenton (Wn.).
Middlesex—Woodbridge (C.).
New Castle—Lea's Run, Edgemoor Station, Stanton, Tatnall; Newport, Old Red Clay Creek, Commons.
6. RANUNCULUS ABORTIVUS L. M. p. 426. Woods and moist ground. Spring.
7. RANUNCULUS MICRANTHUS Nutt. M. p. 426. Rich woods. Spring.
Bucks—Sellersville (Ja.) (Fr.). *Lancaster*—(P.).
Hunterdon—Stockton (C.).
8. RANUNCULUS SCALERATUS L. *Ditch Crowfoot*. M. p. 427. Wet ditches. Spring and summer.
9. RANUNCULUS RECURVATUS Poir. M. p. 427. Woods. Spring.
10. RANUNCULUS ACRIS L. *Tall Buttercup*. M. p. 427. Fields and waste places. Summer.

11. *RANUNCULUS BULBOSUS* L. *Common Buttercup*. M. p. 427. Fields and roadsides. Early summer.

12. *RANUNCULUS PENNSYLVANICUS* L. f. *Bristly Buttercup*. M. p. 427. Wet, open places. Summer.

Bucks—Andalusia, *Mart.* (B. C.). *Delaware*—(P.). *Lancaster*—Col-lins' Ferry (Ca.). *Berks*—Wernersville (Te.). *Northampton*—(P.). *Dauphin*—(P.).

Burlington—Pemberton (C.). *Camden*—Camden (C.). *Gloucester*—Repaupo (He.) (Sa.). *Monmouth*—Freehold (C.). *Mercer*—Trenton, Princeton (C.). *Somerset*—Black Swamp (C.). *Hunterdon*—Stockton (C.).

New Castle—Hamburg Road, Red Lion Creek.

13. *RANUNCULUS REPENS* L. M. p. 427. Fields and roadsides. Early summer.

Philadelphia—(P.). *Bucks*—Bristol (Fr.). *Delaware*—Swarthmore (Pr.), Tinicum, *Dr. Geo. Smith* (B. Sm.). *Lehigh*—Salsbury (Kr.). *Northampton*—(P.).

Camden—Kaighn's Point (He.) (Wn.). *Monmouth*—Deal Beach (Wn.).

New Castle—Ogletown, frequent.

14. *RANUNCULUS SEPTENTRIONALIS* Poir. *Marsh Buttercup*. M. p. 427. Swamps and low grounds. Early summer.

15. *RANUNCULUS HISPIDUS* Michx. M. p. 428. Dry woods and thickets. Spring.

16. *RANUNCULUS FASCIULARIS* Muhl. *Early Buttercup*. M. p. 428. Woods. Spring.

17. *RANUNCULUS PARVULUS* L. M. p. 428. Ballast. Summer. *Camden*—Kaighn's Point (Ja.).

18. *RANUNCULUS ARVENSIS* L. M. p. 428. Waste grounds. Summer. *Ocean*—Toms River (C.).

18. *BATRACHIUM* S. F. Gray. WHITE WATER CROWFOOT.

Leaves sessile, circinate, the segments short, spreading around the stem, nearly in one plane; beak of achene minute. 1. *B. divaricatum*.

Leaves more or less petioled, not circinate. 2. *B. trichophyllum*.

1. *BATRACHIUM DIVARICATUM* (Schränk.) Wimm. M. p. 429. Ponds and streams. Summer.

Monmouth—Squan and Shark rivers (C.).

2. *BATRACHIUM TRICHOPHYLLUM* (Chaix.) Bossch. M. p. 429. Ponds and streams. Summer.

Philadelphia—Lower Wissahickon (Je.), W. Fort Mifflin (Sa.). *Bucks*—Tullytown (Cr.), near Sellersville (Fr.), Penn Valley (Ja.). *Delaware*—Darby Creek, *H. C. Barker* (B. C.), Tinicum, *Dr. Geo. Smith* (Fu.), Haverford (Gi.). *Chester*—(P.). *Lancaster*—Lititz (Ca.) (Pr.). *Lehigh*—Helfrich's Spring (Kr.).

Burlington—Medford (Br.). *Camden*—Camden, *Mart.* (B. C.).

Gloucester—Repaupo (He.). *Salem*—Ditches at Salem (He.). *Mercer*—*Trenton* (C.).

New Castle—Near Edgemoor.

19. FICARIA Huds.

1. FICARIA FICARIA (L.) Karst. *Lesser Celandine*. M. p. 430. Escaped from gardens. Spring.
Philadelphia—Wissahickon (Je.) (Me.) (St.), West Park in Nurseries (VP.). *Delaware*—Lansdowne (Mac.).

20. OXYGRAPHIS Bunge.

1. OXYGRAPHIS CYMBALARIA (Pursh.) Prantl. *Seaside Crowfoot*. M. p. 430. Sandy shores. Summer.
Atlantic—Atlantic City (He.). *Ocean*—Point Pleasant (Br.) (Te.). *Monmouth*—Ocean Grove, Brielle, Manasquan, Shark River (C.).

21. THALICTRUM L. MEADOW RUE.

Filaments filiform or slender, not wider than the anthers.

Flowers strictly dioecious; lower stem leaves distinctly petioled.

1. *T. dioicum*.

Flowers polygamous; leaflets usually glandular or waxy; stem leaves almost sessile.

2. *T. purpurascens*.

Filaments spatulate, often wider than the anthers; plant not glandular.

3. *T. polygamum*.

1. THALICTRUM DIOICUM L. M. p. 431. Rocky woods. Spring.
2. THALICTRUM PURPURASCENS L. M. p. 431. Dry uplands and rocky hills. Summer.
3. THALICTRUM POLYGAMUM Muhl. M. p. 431. Wet meadows and along rivulets. Summer.

Family 6. BERBERIDACEAE T. & G. Barberry Family.

Shrubs; fruit baccate.

1. *Berberis*.

Herbs.

Anthers opening by valves.

Pericarp early bursting, leaving two large, naked, stalked seeds, resembling berries.

2. *Caulophyllum*.

Fruit capsular, half circumscissile.

3. *Jeffersonia*.

Anthers longitudinally dehiscent; fruit baccate; stamens 6-18.

4. *Podophyllum*.

1. BERBERIS VULGARIS L. *Barberry*. M. p. 432. Thickets. Early summer.
Philadelphia—Germantown (Je.). *Bucks*—Bensalem, Mart. (Fr.), Jericho Hill (Ws.). *Delaware*—Painter's Arboretum (He.) (Le.). *Northampton*—Easton, Porter (B. C.) (Ca.).
Monmouth—Redbank, Mattawan, Sandy Hook, Oceanic, Seabright (C.).
Middlesex—Woodbridge (C.).
New Castle—Richardson's Mill, Canby.

2. CAULOPHYLLUM Michx.

1. CAULOPHYLLUM THALICTROIDES (L.) Michx. *Blue Cohosh, Pappoose-root*. M. p. 432. Rich woods. Spring.
Philadelphia—Manayunk, Mart. (B. C.), Wissahickon (Je.), Shawmont

(Sa.). Bucks—Bedminster (Fr.). Montgomery—Conshohocken (Cr.), Pencoyd (Te.) (Re.), Flat Rock Tunnel (Te.). Delaware—Wawa, Glen Mills (Fu.), Castle Rock (Fu.) (Li.), Swarthmore (Pr.), Adels (Sa.), west branch of Chester Creek (Sch.), Chad's Ford (Wn.). Chester—Westtown (Le.) (W. Tr.), Willistown (Pr.). Dauphin—Harrisburg, Steelton (Wn.). Lancaster—(P.). Northampton—(P.).
New Castle—Rockford, Mount Cuba, rare.

3. JEFFERSONIA Bart.

1. JEFFERSONIA DIPHYLLA (L.) Pers. *Twin-leaf, Rheumatism-root*. M. p. 432. Woods. Spring.
Bucks—Shores of Delaware, New Hope (Wa.).

4. PODOPHYLLUM L.

1. PODOPHYLLUM FELTATUM L. *May-apple, Mandrake*. M. p. 432. Rich woods. Spring.

Family 7. MENISPERMACEAE DC. Moonseed Family.

1. MENISPERMUM L.

1. MENISPERMUM CANADENSE L. *Moonseed*. M. p. 434. Banks of streams. Summer.

Family 8. CALYCANTHACEAE Lindl. Strawberry-shrub Family.

1. BUTNERIA Duham.

1. BUTNERIA FLORIDA (L.) Kearney. *Carolina Allspice, Sweet-scented Shrub*. M. p. 435. In gardens. Spring and summer.

Family 9. LAURACEAE Lindl. Laurel Family.

Anthers 4-celled, some of the leaves lobed.

Anthers 2-celled; leaves entire.

1. *Sassafras*.

2. *Benzoïn*.

1. SASSAFRAS Nees & Eberm.

1. SASSAFRAS SASSAFRAS (L.) Karst. M. p. 436. Dry soil. Spring.

2. BENZOIN Fabric.

1. BENZOIN BENZOIN (L.) Coulter. *Spice-bush, Benjamin-bush*. M. p. 437. Damp woods. Spring.

Order 12. PAPAVERALES.

Sepals 2 (very rarely 3 or 4); endosperm fleshy. Fam. 1. *Papaveraceae*.
Sepals or calyx segments 4-8; endosperm none.

Capsule 2-celled by a longitudinal partition usually 2-valved, rarely indehiscent; sepals and petals 4. Fam. 2. *Cruciferae*.

Capsule 1-celled, of 2-6 carpels.

Sepals and petals 4, regular, or petals irregular; capsule of 2 carpels, 2-valved. Fam. 3. *Capparidaceae*.

Sepals and petals 4-8, irregular; capsule of 3-6 carpels, 3-6 valved at the top; disk large. Fam. 4. *Rosaceae*.

Family 1. PAPAVERACEAE B. Juss. Poppy Family.

Flowers regular.

Pod dehiscent at the top, or only to the middle.

Leaves not spiny-toothed.

Leaves spiny-toothed.

Pod dehiscent to the base.

Flowers white; juice red.

Flowers and juices yellow.

Capsule long-linear, rough, tipped with a dilated stigma.

Capsule linear, smooth, tipped with a subulate style and minute stigma.

Flowers irregular. Family Fumariaceae DC.

Each of the two outer petals spurred at the base.

Corolla deeply cordate at base; petals slightly coherent.

Corolla rounded or slightly cordate; petals permanently coherent, persistent.

One of the outer petals spurred at the base.

Capsule 2-valved, few-several-seeded.

Fruit globose, indehiscent, 1-seeded.

1. *Papaver*.2. *Argemone*.3. *Sanguinaria*.4. *Glaucium*.5. *Chelidonium*.6. *Rhœoulla*.7. *Adlumia*.8. *Capnoides*.9. *Fumaria*.

1. PAPAVER L. POPPY.

Glabrate and glaucous; leaves lobed, clasping; capsule subglobose.

1. *P. somniferum*.

Green, hirsute; leaves pinnately divided.

Capsule glabrous.

Capsule subglobose or top-shaped.

Capsule oblong, narrowed below.

Capsule oblong, hispid with a few erect hairs.

2. *P. Rhœas*.3. *P. dubium*.4. *P. Argemone*.

1. PAPAVER SOMNIFERUM L. M. p. 438. Waste grounds and ballast. Summer.

Philadelphia—Woodlands Cemetery (Mac.), Girard Point (Ja.). *Bucks*—Near Sellersville (Fr.). *Delaware*—(P.). *Lancaster*—(P.). *Northampton*—(P.).*Camden*—Kaighn's Point (Wn.).*New Castle*—Not uncommon.

2. PAPAVER RHŒAS L. M. p. 438. Ballast. Summer.

Philadelphia—Girard Point (Ja.). *Delaware*—Near Darby, Dr. Geo. Smith (Fu.).*Camden*—Kaighn's Point, C. A. Boice (B. C.) (Ja.).

3. PAPAVER DUBIUM L. M. p. 438. Waste and cultivated grounds. Summer.

Montgomery—Arcola (Cr.). *Delaware*—Darlington Station (Fu.), Newtown Square (Ja.), Burmont (Mac.), Valley of Darby Creek (B. Sm.), Glen Mills (S. Tr.), Concord (W. Tr.). *Chester*—(P.). *Lancaster*—Pleasant Grove (Ca.), Paradise (St.), Bird-in-Hand (Wn.). *Northampton*—(P.).*Burlington*—Moorestown (Sts.). *Camden*—Kaighn's Point (Ja.) (Wn.). *Ocean*—Forked River (Ja.).*New Castle*—Point Lookout, etc. Scarce.

4. PAPAVER ARGEMONE L. M. p. 438. Waste grounds and on ballast. Summer.

Philadelphia—(P.).

2. ARGEMONE L.

1. ARGEMONE MEXICANA L.
- Mexican or Prickly Poppy.*
- M. p. 439.

Waste places and ballast. Summer.

Philadelphia—Greenwich Point (Te.). *Bucks*—Bedminster, Hilltown (Fr.). *Delaware*—Near Swarthmore (Pr.), Concord, about gardens (W. Tr.). *Lancaster*—(P.). *Lehigh*—Coplay (Kr.). *Northampton*—(P.). *Burlington*—Riverton (C.). *Camden*—Kaighn's Point, C. A. Boice (B. C.) (Ja.). *Mercer*—Trenton (C.).

New Castle—Wilmington, streets, Commons.

3. SANGUINARIA L.

1. SANGUINARIA CANADENSIS L.
- Blood-root.*
- M. p. 439. Rich woods.

Spring.

4. GLAUCIUM Juss.

1. GLAUCIUM GLAUCIUM (L.) Karst.
- Horn-poppy.*
- M. p. 440. Waste places and ballast. Summer.

Philadelphia—Gibson's Point (Mac.).*Camden*—Kaighn's Point (He.) (Ja.) (Wn.). *Mercer*—Princeton (C.).*New Castle*—Greenbank, Commons.

GLAUCIUM CORNICULATUM Curtis.

Northampton—On African Ore pile, Bethlehem Iron Co., E. A.*Bau* (Kr.)

5. CHELIDONIUM L.

1. CHELIDONIUM MAJUS L.
- Celandine.*
- M. p. 440. Waste places. Summer.

6. BICUCULLA Adans.

Spurs divergent; inner petals minutely crested.

1. *B. Cucullaria.*

Spurs short, rounded; inner petals conspicuously crested.

2. *B. Canadensis.*

1. BICUCULLA CUCULLARIA (L.) Millsp.
- Dutchman's-breeches.*
- M. p. 440. Rich woods. Spring.

2. BICUCULLA CANADENSIS (Goldie) Millsp.
- Squirrel-corn.*
- M. p. 441. Rich woods. Spring.

Philadelphia—Wissahickon (Me.), Falls of Schuylkill (Pr.). *Bucks*—Bedminster (Fr.). *Montgomery*—Pencoyd (Re.), Flat Rock Tunnel (Te.). *Chester*—(P.). *Lancaster*—Fishing Creek (Ca.). *Dauphin*—Harrisburg (Wn.).

7. ADLUMIA Raf.

1. ADLUMIA FUNGOSA (Ait.) Greene.
- Climbing Fumitory.*
- M. p. 441. Moist woods. Summer.

Philadelphia—Wissahickon (W. Tr.). *Bucks*—Rock Hill (Fr.) (Ja.), Narrows (Ws.). *Montgomery*—Schwenksville (Cr.) (U. C. S.), West Conshohocken (Mac.), Sumneytown (VP.), Uhl's Mill (Wn.). *Chester*—Coatesville, H. E. Stone (B. C.), French Creek (S. Tr.). *Lancaster*—Pequea Creek (Ca.), York Furnace, mouth of Tucquan Creek (St.). *Lehigh*—Lehigh Mountain (Kr.).

Somerset—Peapack (C.).

New Castle—Brandywine Creek near Wilmington (Pr.), Rockford, Duponts. Rare.

8. CAPNOIDES Adans. CORYDALIS.

Stems tall; flowers pink with yellow tips. 1. *C. sempervirens*.
Stems low, diffuse or ascending; flowers yellow. 2. *C. flavulum*.

1. CAPNOIDES SEMPERVIRENS (L.) Borek. M. p. 441. Rocky places. Spring and summer.

Philadelphia — Wissahickon (Ja.). *Bucks* — Rock Hill (Fr.), Argus (Wn.). *Montgomery* — Spring Mount near Schwenksville (U. C. S.), Sumneytown (VP.). *Chester*—St. Peter's (Ke.), Falls of French Creek (Sa.). *Lancaster*—Peach Bottom (Ca.), banks of Susquehanna (W. Tr.). *Lehigh*—Trexlerstown (Her.), Lehigh Mountain (Kr.). *Dauphin*—(P.). *Mercer*—Princeton (Te.). *Hunterdon*—Milford (Ws.).

2. CAPNOIDES FLAVULUM (Raf.) Kuntze. M. p. 442. Rocky woods. Early summer.

Philadelphia — Wissahickon, I. Burk (He.), Robinson's Knoll (Ke.) (Te.), Fairmount Park (Mar.), Manayunk (Pr.). *Bucks*—Carversville, rare (Ca.), Yardley, A. B. Kauffman (Fr.). *Chester*—(P.). *Lancaster*—Along the Susquehanna (Le.). *Dauphin*—Steelton (Wn.).

Camden—Banks of Delaware (C.). *Cape May*—Delaware Bay (C.). *Mercer*—Trenton, Princeton (C.). *Hunterdon*—Holland, Raven Rock (C.), Milford (B. Sm.).

New Castle—Namaan's Creek near Harvey.

9. FUMARIA L.

1. FUMARIA OFFICINALIS L. *Fumitory*. M. p. 442. Waste places and bal-
last. Summer.

Family 2. CRUCIFERAE. Mustard Family.

*Pod a silique or silicle, dehiscent into two valves to the base.

†Pod an elongated-linear silique, or at least twice as long as wide.

1. Silique terete, 4-sided, or compressed, very short-stipitate, or sessile on the receptacle.

a. Silique tipped with the short, slender style, or style none.

Seeds globose or oblong, wingless.

Seeds in 2 rows in each cell of the pod.

Pubescence, when present, of simple hairs.

12. *Roripa*.

Pubescence of forked hairs; leaves finely dissected.

22. *Sophia*.

Seeds in only 1 row in each cell.

Leaves reniform or cordate, undulate or repand; flowers white.

4. *Alliaria*.

Leaves dentate or pinnatifid; hairs simple; flowers yellow.

5. *Sisymbrium*.

Leaves finely dissected; pubescence of forked hairs; flowers yellow.

22. *Sophia*.

Leaves entire, or slightly toothed.

Flowers white or pink.

23. *Stenophragma*.

Flowers yellow.

25. *Erysimum*.

Flowers large, purple, purplish, or white.

28. *Hesperis*.

- Seeds flat, wingless, or winged.
 Siliques 4-angled, the valves keeled; flowers yellow.
 11. *Barbarea*.
- Siliques flat or flattish.
 Valves of the silique nerveless.
 Stems leafy below or throughout. 13. *Cardamine*.
 Stems leafless below, 2-4 leaved above.
 14. *Dentaria*.
- Valves of the silique 1-nerved or veiny, not elastically dehiscent.
 24. *Arabis*.
- b. Silique produced into a beak beyond the valves.
 Beak conic, very short in No. 8.
 Silique terete; seeds in 1 row. 8. *Brassica*.
 Silique flat; seeds in 2 rows. 9. *Diploxia*.
 Beak flat, sword-shaped. 7. *Sinapis*.
2. Silique elliptic or oblong, very flat, 2-3 times as long as broad, clearly stipitate. 15. *Lunaria*.
- †† Pod an orbicular globose or oblong silicle, or but little more than twice as long as wide.
 a. Silicle globose, or flattened parallel with the septum.
 Silicle globose, or terete-oblong, little or not at all compressed.
 Seeds minute, round, not flattened, in 2 rows in each cell.
 12. *Eoripa*.
 Seeds flat; silicle inflated; plants stellate-pubescent.
 16. *Lesquerella*.
 Silicle compressed or flat, many-seeded. 21. *Draba*.
 Silicle compressed or flat, many-seeded.
 Flowers yellow. 26. *Alyssum*.
 Flowers white. 27. *Koniga*.
 Silicle pear-shaped or obovoid, many-seeded. 18. *Camelina*.
- b. Silicle flattened at right angles to the narrow septum.
 Seeds several in each cell of the silicle.
 Silicle triangular, obtusate. 17. *Bursa*.
 Silicle oblong or orbicular, winged all around. 3. *Thlaspi*.
 1. *Lepidium*.
 Seeds solitary in each cell, compressed.
- ** Pod indehiscent, short or elongated.
 Pod broader than long, more or less didymous. 2. *Coronopus*.
 Pod globose, reticulated. 19. *Neslia*.
 Pod elongated.
 Pod of 2 joints, separating at maturity.
 Lower joint of pod seedless or 2-4-seeded; cotyledons conduplicate. 20. *Rapistrum*.
 Lower joint of pod 1-seeded; cotyledons accumbent.
 6. *Cakile*.
 Pod constricted between the seeds, not jointed, beaked.
 10. *Eaphanus*.

1. LEPIDIUM L. PEPPERGRASS.

- Stem-leaves clasping by an auriculate base.
 Pods broadly ovate, winged. 1. *L. campestre*.
 Pods wingless, broader than long. 2. *L. Draba*.
- Stem-leaves petioled or sessile, not clasping.
 Pods and seeds entirely wingless; petals none. 3. *L. ruderals*.
 Pods slightly winged above, orbicular or oval, about 2 mm. broad; petals present or none.
 Cotyledons accumbent; petals generally present. 4. *L. Virginicum*.
 Cotyledons incumbent; petals minute or wanting. 5. *L. apetalum*.

1. *LEPIDIUM CAMPESTRE* (L.) R. Br. Cow-cress. M. p. 445. Fields and waste places. Summer.
Camden—*Kaighn's Point* (Ja.) (Wn.).
3. *LEPIDIUM RUDERALE* L. M. p. 445. Roadsides, waste places, and ballast. Summer.
Philadelphia—*Navy Yard, Mart.* (B. C.), *West Philadelphia* (Mac.), *Girard Point* (Te.). *Northampton*—*Easton, Porter* (B. C.).
Burlington—*Moorestown* (Sta.). *Camden*—*Kaighn's Point, Mercer*—*Trenton* (C.).
New Castle—*Streets, Port Penn, Delaware City, wharves, Tatnall; Swedes' Church, Wilmington; Commons.*
4. *LEPIDIUM VIRGINICUM*. M. p. 446. Fields and roadsides. Summer.
5. *LEPIDIUM APETALUM* Willd. M. p. 446. Dry places. Summer.
Philadelphia—*Philadelphia, Mart.* (B. C.), *Greenwich Point* (Te.).
Bucks—*Point Pleasant* (Fr.).
Camden—*Camden, ballast, Mart.* (B. C.). *Gloucester*—*Near Mickleton* (He.), *near Swedesboro* (Li.).
LEPIDIUM GRAMINIFOLIUM L. Ballast.
Camden—*Kaighn's Point* (Ja.).
LEPIDIUM SMITHII Hook. Ballast.
Philadelphia—*Girard Point* (Te.).

2. *CORONOPUS* Gaertn. WART CRESS, SWINE CRESS.

Pod rugose, not crested.

1. *C. didymus*.

Pod coarsely wrinkled, crested.

2. *C. Coronopus*.

1. *CORONOPUS DIDYMUS* (L.) J. E. Smith. M. p. 446. Waste places and ballast. Summer.
Philadelphia—*Byberry, Mart.* (B. C.), *Greenwich Point, Girard Point* (Te.).
Camden—*Kaighn's Point* (Ja.) (Wn.).
2. *CORONOPUS CORONOPUS* (L.) Karst. M. p. 446. Ballast. Summer.
Philadelphia—*Greenwich Point, Girard Point* (Te.). *Chester*—(P.).
Camden—*Kaighn's Point, C. A. Boice* (B. C.) (Wn.).

3. *THLASPI* L.

1. *THLASPI ARVENSE* L. Pennycress. M. p. 447. Waste places and ballast. Summer.
Philadelphia—*Fairmount Park, Mart.* (B. C.), *Columbia Bridge, E. Dittenbaugh* (B. C.). *Bucks*—*Rock Hill* (Fr.). *Montgomery*—*Jenkinson* (Pr.). *Lancaster*—*Paradise* (St.).
Camden—*Kaighn's Point* (Ja.). *Mercer*—*Trenton* (C.).

4. *ALLIARIA* Adans.

1. *ALLIARIA ALLIARIA* (L.) Britton. Hedge Garlic, Garlic Mustard. M. p. 447. Waste places, woods, and along roadsides. Spring.
Philadelphia—*East of School Lane, Germantown* (VP.). *Montgomery*—*Above Flat Rock Tunnel* (VP.).

5. SISYMBRIUM L. HEDGE MUSTARD.

Flowers yellow; pods 1-1.5 cm. long, appressed.

1. *S. officinale*.

Flowers cream-color; pods 5-10 cm. long, divergent.

2. *S. altissimum*.

1. SISYMBRIUM OFFICINALE (L.) Scop. M. p. 448. Waste places. Summer.

2. SISYMBRIUM ALTISSIMUM L. M. p. 448. Ballast. Summer.

Philadelphia—Girard Point (Ja.), Neck (VP.). *Bucks*—Sellersville (Fr.). *Northampton*—Bethlehem (P.). *Delaware*—Ridley (B. Sm.).

6. CAKILE Gaertn.

1. CAKILE EDENTULA (Bigel) Hook. *American Sea-rocket*. M. p. 448. Seacoast; also ballast. Summer.

New Jersey—Seacoast, common. *Camden*—Kaighn's Point (Wn.).

7. SINAPIS L.

1. SINAPIS ALBA L. *White Mustard*. M. p. 449. Fields and waste places. Summer.

8. BRASSICA L.

None of the leaves clasping the stem, the upper sessile.

Pods slender, 1-2.5 cm. long, appressed.

1. *B. nigra*.

Pods rather slender, 2-5 cm. long, erect, not appressed, on slender pedicels 6-10 mm. long.

2. *B. juncea*.

Pods spreading or ascending at maturity, on stout pedicels 4-6 mm. long.

3. *B. arvensis*.

Upper leaves clasping by an auricled base.

4. *B. campestris*.

1. BRASSICA NIGRA (L.) Koch. *Black Mustard*. M. p. 449. Fields and waste places. Summer.

2. BRASSICA JUNCEA (L.) Cosson. *Indian Mustard*. M. p. 449. Ballast. Summer.

Philadelphia—Wissahickon (VP.). *Northampton*—(P.).

Camden—Kaighn's Point (Ja.).

3. BRASSICA ARVENSIS (L.) B. S. P. *Charlock*. M. p. 450. Fields and waste places. Summer.

4. BRASSICA CAMPESTRIS L. *Rutabaga, Turnip*. M. p. 450. Fields and waste places. Summer.

Camden—Kaighn's Point (Ja.).

BRASSICA NAPUS L. *Rape*. M. p. 450. Ballast. Summer.

9. DIPLLOTAXIS DC. ROCKET.

Perennial; stem leafy nearly to the inflorescence.

1. *D. tenuifolia*.

Annual; leaves mostly basal, oblanceolate.

2. *D. muralis*.

1. DIPLLOTAXIS TENUIFOLIA (L.) DC. M. p. 450. Ballast. Summer.

Camden—Kaighn's Point (He.) (Ja.).

2. DIPLLOTAXIS MURALIS (L.) DC. M. p. 450. Ballast. Summer.

Camden—Kaighn's Point (Ja.) (Wn.).

10. RAPHANUS L.

Flowers yellow, fading white; pod longitudinally grooved, 4-10-seeded.

1. *R. Raphanistrum*.

Flowers pink or white; pod not longitudinally grooved, 2-3-seeded.

2. *R. sativus*.

1. *RAPHANUS RAPHANISTRUM* L. *Wild Radish*. M. p. 450. Fields and waste places. Summer.
2. *RAPHANUS SATIVUS* J. L. *Garden Radish*. M. p. 450. Escaped from cultivation. Summer.

11. *BARBAREA* R. Br. WINTER CRESS.

Pods obtusely 4-angled, slender-pedicelled; leaf-segments 1-4 pairs.

Pods divergent or ascending.

Pods erect, appressed.

Pods sharply 4-angled, stout pedicelled; leaf-segments 4-8 pairs.

3. *B. praecox*.

1. *BARBAREA BARBAREA* (L.) MacM. *Yellow Rocket*. M. p. 451. Low grounds and roadsides. Spring.
2. *BARBAREA STRICTA* Andr. M. p. 451. Fields and waste places. Spring.
3. *BARBAREA PRAECOX* (J. E. Smith) R. Br. M. p. 451. Waste places. Spring.

Philadelphia—Upper Wissahickon (Je.), Germantown (Me.). *Bucks*—Sellersville, Doylestown, Penn Valley (Fr.). *Montgomery*—Shannonville (Cr.). *Delaware*—Concord (W. Tr.). *Northampton*—Easton, Porter (B. C.).

Camden—Knighn's Point (Wn.). *Salem*—Woodstown (Wa.). *Hunterdon*—Rosemont (C.).

New Castle—Greenbank, Commons. Now common.

12. *RORIPA* Scop. CRESS.

Flowers yellow.

Plants perennial by creeping or subterranean branches.

Plants annual or perennial, with fibrous roots.

Fruiting pedicels 2-4 mm. long, stem diffuse.

Fruiting pedicels 4-8 mm. long; stem erect.

Stem nearly or quite glabrous; pods linear or linear-oblong.

Stem hispid-pubescent; pods globose or oval.

1. *R. sylvestris*.

2. *R. obtusa*.

3. *R. palustris*.

4. *R. hispida*.

Flowers white.

Leaves pinnately divided; pods linear.

Leaves simple or the lower pinnatifid; pods oblong or globose.

Terrestrial, tall; leaves crenate, or the lower lobed or pinnatifid.

Aquatic; immersed leaves finely dissected.

6. *R. Armoracia*.

7. *R. Americana*.

1. *RORIPA SYLVESTRIS* (L.) Bess. M. p. 452. Wet meadows. Summer.
2. *RORIPA OBTUSA* (Nutt.) Britton. M. p. 452. Ballast. Spring and summer.
Camden—Camden (He.).
3. *RORIPA PALUSTRIS* (L.) Bess. *Marsh Cress*. M. p. 452. Wet places and in shallow water. Summer.
4. *RORIPA HISPIDA* (Desv.) Britton. M. p. 453. Wet places. Summer.
Philadelphia—(P.). *Bucks*—Delaware River (Fr.). *Lancaster*—(P.).
Northampton—Easton, Porter (B. C.). *Dauphin*—(P.).

- Salem*—Penn Grove (C.). *Mercer*—Trenton, Princeton (C.). *Mumtendon*—Rosemont (C.).
New Castle—Cherry Island. Frequent.
5. *RORIPA NASTURTIUM* (L.) Rusby. *Water Cress*. M. p. 453. Brooks and ditches. Summer.
6. *RORIPA ARMORACEA* (L.) A. S. Hitchcock. *Horse-radish*. M. p. 453. Escaped from cultivation into moist ground. Summer.
7. *RORIPA AMERICANA* (A. Gray) Britton. M. p. 453. Slow streams. Summer.
Philadelphia—(P.).

13. CARDAMINE L. BITTER CRESS.

- Leaves pinnately divided, or some of them of but a single terminal segment.
 Flowers 1-2 cm. broad, white or purplish. 1. *C. pratense*.
 Flowers 2-8 mm. broad, white.
 Mature pods erect, 0.5-1 mm. wide.
 Flowers 4-5 mm. wide; plants of swamps, streams, or wet grounds.
 Segments of basal leaves 4-25 mm. wide; plant 2-9 dm. tall. 2. *C. Pennsylvanica*.
 Segments of basal leaves 1-3 mm. wide; plant 1-3 dm. tall. 3. *C. arenicola*.
 Flowers 2-3 mm. wide; plant of dry, rocky situations. 4. *C. parviflora*.
 Mature pods divergent or ascending, more than 1 mm. wide. 5. *C. flexuosa*.
 Leaves entire, toothed, or rarely with 1 or 2 lateral segments. 6. *C. bulbosa*.
 Stem erect from a tuberous base. 7. *C. rotundifolia*.
 Stem decumbent, stoloniferous; roots fibrous.
1. *CARDAMINE PRATENSIS* L. *Cuckoo-flower*. M. p. 454. Wet places. Spring.
Philadelphia—Wissahickon (Ja.), Germantown (Me.).
2. *CARDAMINE PENNSYLVANICA* Muhl. M. p. 454. Wet places. Spring.
3. *CARDAMINE ARENICOLA* Britton. M. p. 454. Moist or wet sandy soil. Spring.
Lancaster—Safe Harbor (P.).
4. *CARDAMINE PARVIFLORA* L. M. p. 454. Rocks. Spring.
5. *CARDAMINE FLEXUOSA* With. M. p. 454. In wet woods and swamps. Spring.
Bucks—Three-Mile Run, Tullytown (Fr.). *Northampton*—(P.).
6. *CARDAMINE BULBOSA* (Schreb.) B. S. P. *Spring Cress*. M. p. 455. Wet meadows and springs. Spring.
7. *CARDAMINE ROTUNDIFOLIA* Michx. M. p. 455. Cool, shaded springs. Spring.
Bucks—Quakertown (Cr.), Springfield, rare (Fr.). *Delaware*—Valley of Darby Creek (B. Sm.). *Chester*—Coatesville, H. E. Stone (B. C.), Upland, London Grove (Le.). *Lancaster*—York Furnace (Cr.) (Ja.) (Lt.). *Dauphin*—Rockville (Wn.).
New Castle—N. Park, N. Long Race, Tatnall; Mount Cuba, Commons. Rare.

14. DENTARIA L. TOOTHWORT, PEPPER-ROOT.

Basal leaves and stem-leaves similar.

Leaf-divisions lanceolate or oblong, lobed or cleft. 1. *D. laciniata*.

Leaf-divisions ovate or ovate-oblong, crenate or lobed.

2. *D. diphylla*.

Divisions of the stem leaves linear or lanceolate; those of the basal leaves ovate, much broader. 3. *D. heterophylla*.

1. DENTARIA LACINIATA Muhl. M. p. 455. Damp woodlands. Spring.

2. DENTARIA DIPHYLLA Michx. M. p. 456. Rich woods. Spring.

Bucks—Nockamixon (Fr.).

3. DENTARIA HETEROPHYLLA Nutt. M. p. 456. Damp woods. Spring.

Philadelphia—Belmont Valley (Gi.). Bucks—Near Quakertown, rare (Fr.). Montgomery—Rose Glen (Br.), Shannonville (Cr.), Arcola (Mar.). Chester—(P.).

Hunterdon—Stockton (C.).

New Castle—Rattlesnake Run, Tatnall and Fell; Duponts, Tatnall; Faulkland, Commons.

15. LUNARIA L.

1. LUNARIA ANNUA L. *Honesty*. M. p. 456. Escaped from gardens. Early summer.

Bucks—Nockamixon (P.). Delaware—Concord (W. Tr.).

16. LESQUERELLA S. Wats. BLADDER POD.

1. LESQUERELLA PERFOLIATUM (L.) Watson. Ballast. Summer.

Camden—W. J. & S. R. Yard, Camden (Li.).

17. BURSA Weber.

1. BURSA BURSA-PASTORIS (L.) Britton. *Shepherd's Purse*. M. p. 459. Fields and waste places. All year.

18. CAMELINA Crantz. FALSE FLAX.

Glabrous or nearly so; pod 6-8 mm. long.

1. *C. sativa*.

Pubescent, at least below; pod 4-6 mm. long.

2. *C. microcarpa*.

1. CAMELINA SATIVA (L.) Crantz. M. p. 459. Waste places. Early summer.

Philadelphia—Byberry, Mart. (B. C.), Germantown (Me.), above Manayunk (Pr.), Wayne Junction (Wn.). Bucks—Benjamin (Fr.). Montgomery—Shannonville (Cr.). Delaware—Swarthmore (Pr.), Concord (W. Tr.). Chester—(P.). Lancaster—(P.). Lehigh—Lehigh Mountain (Kr.). Dauphin—Harrisburg, Steelton (Wn.).

Burlington—Moorestown (Sta.). Camden—Kaighn's Point (He.), Clementon (Sa.). Gloucester—Mullica Hill (He.), Westville (Ke.), Timber Creek (Te.).

New Castle—Common.

2. CAMELINA MICROCARPA Andr. M. p. 459. Waste places. Summer.

Bucks—Penn Valley (Fr.). Delaware—(P.). Northampton—(P.).

19. NESLIA Desv. BALL MUSTARD.

1. NESLIA PANICULATA (L.) Desv. M. p. 459. Waste places. Summer.

Philadelphia—Ballast (P.).

20. RAPISTEUM Desv.

1. RAPISTEUM RUGOSUM (L.) All. M. p. 460. Ballast and waste places. Summer.

Philadelphia—Ballast (He.). *Northampton*—Easton, Porter (B. C.).
Camden—Kaighn's Point (He.).

21. DRABA L. WHITLOW-GRASS.

Petals deeply 2-cleft.

Petals entire, or rarely toothed.

1. *D. verna*.

2. *D. Caroliniana*.

1. DRABA VERNA L. M. p. 460. Sandy places. Early spring.

2. DRABA CAROLINIANA Walt. M. p. 460. Sandy fields. Spring.

Bucks—Point Pleasant (Fr.). *Lancaster*—Lancaster (Ca.).

Burlington—Burlington, I. Burk (He.). *Camden*—Cooper's Creek near
Starts, Mari. (B. C.), *Clementon* (Br.). *Gloucester*—Swedesboro (Id.).
Cumberland—Vineland (Ab.). *Middlesex*—South Amboy (C.). *Hunter-*
don—Bull's Island (C.).

22. SOPHIA Adams. HEDGE-MUSTARD.

Pods narrowly linear, 1.5-2.5 cm. long, 1 mm. wide, curved upward; pedicels ascending.

1. *S. Sophia*.

Pods linear-oblong, 5-14 mm. long, 1-2 mm. wide, straight or nearly so.

2. *S. pinnata*.

1. SOPHIA SOPHIA (L.) Britton. M. p. 462. Waste places. Summer.

Philadelphia—Philadelphia Salt Works, I. Burk (He.).

Camden—Kaighn's Point (Ja.) (Te.) (Wn.).

2. SOPHIA PINNATA (Walt.) Britton. M. p. 462. Dry soil. Summer.

Philadelphia—Ballast (P.). *Chester*—Banks of the Schuylkill, *Dar-*
lington (Fl. C.).

Cape May—Delaware Bay (C.). *Hunterdon*—Rosemont (C.).

23. STENOPHRAGMA Celak.

1. STENOPHRAGMA THALIANA (L.) Celak. Mouse-ear Cress. M. p. 463. Old fields and rocks. Spring.

24. ARABIS L. ROCK-CRESS.

Seeds in 1 row, or in 2 incomplete rows in each cavity of the pod.

Basal leaves pinnatifid; pods ascending.

1. *A. lyrata*.

Basal leaves merely dentate or lyrate.

Pods nearly erect, 1 mm. broad.

Flowers white, 8 mm. broad; pods not appressed; style 1 mm. long.

2. *A. patens*.

Flowers white or greenish-white, 4-6 mm. broad; pods appressed; style none.

3. *A. hirsuta*.

Pods recurved-spreading.

Plant glabrous throughout.

4. *A. laevigata*.

Leaves and lower part of stem hairy.

5. *A. Canadensis*.

Seeds in 2 distinct rows in each cavity of the pod.

6. *A. glabra*.

1. ARABIS LYRATA L. M. p. 463. Rocks and sandy shores. Spring and summer.

2. ARABIS PATENS Sulliv. M. p. 464. Rocky woods. Summer.

Bucks—Rock Hill (Ja.). *Montgomery*—Ivy Rock (Le.) (Wn.). *Dela-*

were—Valley of Darby Creek (B. Sm.). *Chester*—Hibbert's Mill (Fr.), Phoenixville (Sa.). *Lancaster*—(P.). *Berks*—Reading (Wn.).

3. *ARABIS HIRSUTA* (L.) Scop. M. p. 464. Rocks. Summer.

Bucks—Near Sellersville (Fr.). *Chester*—Chester Valley (La.). *Lancaster*—York Furnace (Cr.). *Berks*—Opposite Reading (Wn.). *Northampton*—(P.).

Gloucester—Swedesboro (Li.). *Mercer*—Hightstown (C.).

4. *ARABIS LAEVIGATA* (Muhl.) Poir. M. p. 464. Rich wooded hills. Spring.

5. *ARABIS CANADENSIS* L. *Sickle-pod*. M. p. 464. Woods and ravines. Summer.

6. *ARABIS GLABRA* (L.) Bernh. *Tower Mustard*. M. p. 465. Rocks and fields. Summer.

Delaware—Upper Providence (Fu.). *Northampton*—Easton, Porter (B. C.).

Cape May—Cape May Point (C.).

New Castle—18th street near Woodlawn, Tatnall and Commons.

25. *ERYSIMUM* L.

1. *ERYSIMUM CHEIRANTHOIDES* L. *Wormseed* or *Treacle Mustard*. M. p. 465. Banks of streams and ballast. Summer.

Philadelphia—Old Navy Yard, I. Burk (He.), Germantown (Me.), Gibson's Point (Mac.), Girard Point (Te.). *Lancaster*—York Furnace, above Peach Bottom (Pr.). *Dauphin*—(P.).

26. *ALYSSUM* L.

1. *ALYSSUM ALYSSOIDES* (L.) Gouan. M. p. 466. Fields. Summer.

Philadelphia—Chestnut Hill, C. F. Barker (B. C.), Mount Airy (Me.). *Delaware*—Concord (W. Tr.). *Northampton*—Easton, Porter (B. C.).

27. *KONIGA* Adans.

1. *KONIGA MARITIMA* (L.) R. Br. *Sweet Alyssum*. M. p. 466. Occasionally escaped.

28. *HESPERIS* L.

1. *HESPERIS MATRONALIS* L. *Dame's Violet*, *Rocket*. M. p. 467. Fields and roadsides. Summer.

Family 3. *CAPPARIDACEAE* Lindl. *Caper Family*.

Pod long-stipitate on its pedicel.

1. *Cleome*.

Pod nearly or quite sessile on its pedicel.

2. *Polanisia*.

1. *CLEOME* L.

1. *CLEOME SPINOSA* L. *Spider-flower*. M. p. 468. Waste places. Summer.

2. *POLANISIA* Raf.

1. *POLANISIA GRAVEOLENS* Raf. M. p. 468. Sandy and gravelly shores. Summer.

Philadelphia—Navy Yard (Te.). *Lancaster*—York Furnace, Peach

Bottom (Ca.) (Pr.), York Haven (Le.), Columbia (Sa.) (Wn.). *Dauphin*
—Harrisburg (Me.) (Pr.), Steelton (Wn.).

Family 4. **RESEDACEAE** S. F. Gray. **Mignonette Family.**

Leaves entire; upper petals lobed, the lower entire. 1. *R. Luteola*.
Leaves lobed or pinnatifid. 2. *R. lutea*.

1. **RESEDA LUTEOLA** L. *Dyer's-weed* or *Weld*. M. p. 469. Waste places
and ballast. Summer.

Philadelphia — Greenwich Point (Mac.) (Te.), Girard Point (Te.),
Bucks — Pleasant Hill, extinct (Fr.).

Camden — Kaighn's Point.

2. **RESEDA LUTEA** L. *Mignonette*. M. p. 469. Ballast. Summer.

Philadelphia — Old Navy Yard (Te.). *Northampton* — Bethlehem, on
African Ore piles, E. A. Rau (B. C.).

Camden — Kaighn's Point.

RESEDA ALBA L. M. p. 469. Ballast. Summer.

Philadelphia — Philadelphia (P.).

RESEDA PHYTEUMA L. Ballast.

Camden — Kaighn's Point (Ja.) (Wn.).

Order 13. **SARRACENIALES.**

Ovary 3-5-celled; leaves hollow.

Fam. 1. *Sarraceniaceae*.

Ovary 1-celled; leaves circinate in unfolding, the blade flat.

Fam. 2. *Droseraceae*.

Family 1. **SARRACENIACEAE** La Pl. **Pitcher-plant Family.**

1. **SARRACENIA** L.

1. **SARRACENIA PURPUREA** L. *Pitcher-plant*, *Side-saddle Flower*. M. p. 470.

Peat bogs. Early summer.

Delaware — Tinicum, Dr. Geo. Smith (Fu.) (B. Sm.) (W. Tr.).

New Jersey — Common.

New Castle — Thompsons, *Tatnall*; Cedar Swamp, *Commons*. Rare.

Family 2. **DROSERACEAE** S. F. Gray. **Sundew Family.**

1. **DROSER** L. **SUNDEW.**

Blade of the leaf orbicular, or wider than long; petals white.

1. *D. rotundifolia*.

Blade of the leaf linear, or longer than wide.

Leaves linear or spatulate, with a distinct petiole; petals white.

2. *D. intermedia*.

Leaves filiform, much elongated, with no distinct petiole; petals purple.

3. *D. filiformis*.

1. **DROSER** ROTUNDIFOLIA L. M. p. 471. Bogs or wet sand. Summer.

2. **DROSER** INTERMEDIA Hayne. M. p. 471. Bogs. Summer.

Bucks — Tullytown (Fr.). *Delaware* — Tinicum (St.).

New Jersey — Common.

1. *New Castle* — Frequent.

3. *DROSERA FILIFORMIS* Raf. M. p. 471. Wet sand near the coast. Summer.
New Jersey—Common.

Order 14. ROSALES.

Small, aquatic, fleshy herbs, with a spathe-like involucre and a 2-3-celled capsule; perianth none. Fam. 1. *Podostemaceae*.

Land or rarely swamp plants without an involucre.

Endosperm present, usually copious and fleshy; leaves mostly without stipules.

Herbs.

Carpels as many as the calyx-segments; stamens as many or twice as many.

Plants succulent; carpels distinct or united at the base, dehiscent lengthwise. Fam. 2. *Crassulaceae*.

Plants not succulent; carpels united to the middle, circumscissile. Fam. 3. *Penthoraceae*.

Carpels fewer than the calyx-segments.

Staminodia present; carpels 3 or 4, wholly united into a one-celled ovary. Fam. 4. *Parnassiaceae*.

Staminodia none; carpels mostly 2, their upper part at least distinct. Fam. 5. *Saxifragaceae*.

Shrubs or trees.

Leaves opposite.

Fam. 6. *Hydrangeaceae*.

Leaves alternate.

Fruit a 2-celled, thin-walled capsule; its base adnate to the calyx. Fam. 7. *Iteaceae*.

Fruit a 1-celled berry. Fam. 8. *Grossulariaceae*.

Fruit a 2-celled, woody, hard capsule.

Fam. 9. *Hamamelidaceae*.

Endosperm none, or very little (copious in *Opulaster*).

Trees with broad leaves and small, monœcious, densely capitate flowers. Fam. 10. *Platanaceae*.

Flowers perfect, or if diœcious or monœcious, not densely capitate.

Flowers regular.

Pistils several or numerous; if only one, as in *Sanguisorba*, it becomes a dry, one-seeded achene.

Carpels distinct, rarely adnate to the calyx, ripening into follicles or achenes.

Fam. 11. *Rosaceae*.

Carpels united, enclosed by the calyx-tube and adnate to it, the fruit a pome. Fam. 12. *Pomaceae*.

Pistil only one.

Ovary 2-ovuled; fruit a drupe; leaves simple.

Fam. 13. *Drupaceae*.

Ovary several-ovuled; fruit a legume; leaves 2-3-pinnate.

Petals valvate in the bud.

Fam. 14. *Mimosaceae*.

Petals imbricated in the bud; *Gleditsia* and *Gymnocladus* in *Caesalpinaceae*.

Flowers irregular (nearly or quite regular in *Gleditsia* and *Gymnocladus*).

Fruit a legume; upper petal enclosed by the lateral ones in the bud; leaves compound, mostly stipulate.

Fam. 15. *Caesalpinaceae*.

Fruit a legume or loment; upper petal enclosing the lateral ones in the bud; leaves compound (sometimes 1-foliolate), stipulate. Fam. 16. *Papilionaceae*.

Family 1. **PODOSTEMACEAE** Lindl. Riverweed Family.1. **PODOSTEMON** Michx.

1. **PODOSTEMON CERATOPHYLLUM** Michx. *River-weed*. M. p. 472. Shallow streams. Summer.

Philadelphia—Byberry, Mart. (B. C.). *Bucks*—Nockamixon (Fu.) (Fr.). *Delaware*—Concord (W. Tr.). *Chester*—(P.). *Lancaster*—Tucquan Island (P.). *Northampton*—(P.).

New Castle—Red Clay Creek, Brandywine Creek, etc. Frequent.

Family 2. **CRASSULACEAE** DC. Orpine Family.

Stamens of the same number as the sepals, minute herbs.

1. *Tillaea*.

Stamens twice as many as the sepals; succulent herbs.

2. *Sedum*.

1. **TILLAEA** L.

1. **TILLAEA AQUATICA** L. *Pigmy-weed*. M. p. 473. Muddy river banks. Summer.

Philadelphia—(P.).

New Castle—Above railroad bridge, Canby.

2. **SEDUM** L.

Cyme regular, compound, the flowers not secund; leaves broad, flat.

Flowers dioecious, mostly 4-parted.

1. *S. roseum*.

Flowers perfect, 5-parted.

2. *S. Telephium*.

Flowers secund along the branches of the cyme.

Petals yellow.

3. *S. acre*.

Petals white.

4. *S. ternatum*.

1. **SEDUM ROSEUM** (L.) Scop. *Roseroot*. M. p. 474. Rocky places. Spring. *Bucks*—Nockamixon.

2. **SEDUM TELEPHIUM** L. *Garden Orpine*. M. p. 474. Escaped from cultivation. Summer.

3. **SEDUM ACRE** L. *Mossy Stonecrop*. M. p. 474. Escaped from cultivation, rocks and roadsides. Summer.

4. **SEDUM TERNATUM**. *Stonecrop*. M. p. 474. Rocky woods; also escaped from cultivation. Spring.

Bucks—Buckingham, Mart. (B. C.), Narrowsville (Li.). *Delaware*—Glen Mills (Fu.), Burmont (Mac.), Valley of Darby Creek, probably introduced (B. Sm.). *Chester*—Westtown (Le.) (Sts.), Goshen Twp. (Pr.). *Lancaster*—York Furnace. *Dauphin*—Steelton (Wn.).

New Castle—Rockford, introduced.

Family 3. **PENTHORACEAE** Rydb. Ditch Stonecrop Family.1. **PENTHORUM** L.

1. **PENTHORUM SEDOIDES** L. *Ditch Stonecrop*. M. p. 475. Open, wet places. Summer.

Family 4. **PARNASSIAOEAE** Dumort. **Grass of Parnassus Family.**1. **PARNASSIA** L.

1. **PARNASSIA CAROLINIANA** Michx. *Grass of Parnassus*. M. p. 476. Wet banks. Summer.
Bucks—(P.). Lehigh—Black River bog (Kr.). Northampton—Easton, A. P. Garber (B. C.).
Ocean—New Egypt (C.).

Family 5. **SAXIFRAGACEAE** Dumort. **Saxifrage Family.**

Placentae axial.

1. *Saxifraga*.

Placentae almost basal.

2. *Tiarella*.

Placentae parietal.

Petals present; terrestrial plants.

3. *Heuchera*.

Petals entire.

4. *Mitella*.

Petals lobed or pinnatifid.

5. *Chrysosplenium*.

Petals none; small aquatic plants.

1. **SAXIFRAGA** L. **SAXIFRAGE.**

Plants large, 3-10 dm. tall, growing in wet places.

Leaves merely denticulate or repand; follicles ovoid.

1. *S. Pennsylvania*.

Leaves coarsely and sharply dentate; follicles lanceolate.

2. *S. micranthidifolia*.

Plants low, 5-45 cm. tall, growing in dry or rocky places.

3. *S. Virginensis*.

1. **SAXIFRAGA PENNSYLVANICA** L. *Swamp Saxifrage*. M. p. 479. Boga Spring.

2. **SAXIFRAGA MICRANTHIDIFOLIA** (Haw.) B. S. P. *Lettuce Saxifrage*. M. p. 479. Cold mountain brooks. Spring.

Lehigh—Allentown, A. P. Garber (B. C.), Idlewild, Lehigh Mountain (Kr.). Northampton—Bethlehem, Dr. J. B. Brinton (He.).

3. **SAXIFRAGA VIRGINIENSIS** Michx. *Early Saxifrage*. M. p. 479. Exposed rocks and dry hillsides. Early spring.

2. **TIARELLA** L.

1. **TIARELLA CORDIFOLIA** L. *False Mitrewort*. M. p. 480. Moist woods. Early spring.

Delaware—Crum Creek, James Howard (Fu.).

3. **HEUCHERA** L. **ALUM-ROOT.**

Stem with 1-3 leaves.

1. *H. Curtisii*.

Stem strictly scapose.

2. *H. Americana*.

1. **HEUCHERA CURTISII** T. & G. M. p. 481. Rich woods. Spring.

Lancaster—Lancaster, Mart. (B. C.), Safe Harbor (Ca.), York Furnace (Cr.).

2. **HEUCHERA AMERICANA** L. M. p. 482. Rocky woodlands. Summer.

4. **MITELLA** L.

1. **MITELLA DIPHYLLO** L. *Mitrewort, Bishop's-cap*. M. p. 483. Rich woods. Spring.

5. CHRYSOSPLENIUM L.

1. CHRYSOSPLENIUM AMERICANUM Schwein. *Golden Saxifrage*. M. p. 483.
Cold, wet places. Early spring.

Family 6. HYDRANGEACEAE Dumort. *Hydrangea* Family.

Stamens 8-10; exterior flowers of the corymb usually neutral.

- Stamens 20-40; all flowers perfect.
1. *Hydrangea*.
 2. *Philadelphus*.

1. HYDRANGEA L.

1. HYDRANGEA ARBORESCENS L. *Wild Hydrangea*. M. p. 484. Rocky banks. Early summer.

Philadelphia—Banks of Schuylkill, *Mart.* (B. C.), Chamounix (Ke.), Shawmont (Le.) (Sa.), Fairmount Park (Te.) (Wn.). *Bucks*—Narrowsville, Dr. J. B. Brinton (B. C.), Point Pleasant (Fr.), Brownsburg, Delaware River shore (Ws.). *Montgomery*—Rose Glen (Ja.), Pencoyd (Re.), W. Spring Mills (U. C. S.), Flat Rock Tunnel (Wn.). *Chester*—Valley Forge (Cr.). *Lancaster*—York Furnace (Cr.) (Li.), Susquehanna River (Pr.). *Lehigh*—Along the Lehigh, Laurel Hill (Kr.). *Northampton*—Easton, Porter (B. C.). *Dauphin*—Steelton (Wn.).

Burlington—Bordentown (C.). *Hunterdon*—Lambertville, Mountain Gilboa, Raven Rock (C.).

2. PHILADELPHUS L. MOCK ORANGE. SYRINGA.

- Flowers inodorous, solitary or few. 1. *P. grandiflorus*.
Flowers racemose, numerous, fragrant. 2. *P. coronarius*.

1. PHILADELPHUS GRANDIFLORUS Willd. M. p. 485. Escaped from cultivation. Spring.
2. PHILADELPHUS CORONARIUS L. M. p. 485. Escaped from cultivation. Early summer.

Family 7. ITEACEAE Agardh. *Itea* Family.

1. ITEA L.

1. ITEA VIRGINICA L. M. p. 485. Wet places in the pine-barrens. Early summer.
New Jersey—Frequent.
New Castle—Frequent.

Family 8. GROSSULARIACEAE Dumort. *Gooseberry* Family.

1. RIBES L.

Leaves plicate in vernation.

Racemes 1-4 flowered, stem generally with subaxillary spines.

Calyx-lobes oblong, shorter than the tube; berry often spiny or bristly, stamens not exserted. 1. *R. cynosbati*.

Calyx-lobes equalling or exceeding the tube; berry glabrous.

Stamens scarcely exceeding the oblong calyx-lobes.

2. *R. oxycanthoides*.

Stamens somewhat exceeding the linear calyx-lobes.

3. *R. rotundifolium*.

Racemes many-flowered; stem unarmed; calyx campanulate.

4. *R. floridum*.

Leaves convolute in bud; stem unarmed; calyx-tube tubular, bright yellow.
5. *R. aureum*.

RIBES L. GOOSEBERRY and CURRANT.

1. RIBES CYNOSBATI L. *Dog-berry*. M. p. 486. Rocky woods. Spring.
Lancaster—Columbia (Pr.). *Berks*—Monocacy (Me.), near Hamburg (Wn.).
2. RIBES OXYACANTHOIDES L. M. p. 487. Wet woods. Early summer.
Bucks—Narrowsville (Li.). *Delaware*—Chester Heights (Wn.). *Lancaster*—(P.). *Northampton*—Pen Argyl (Ja.).
3. RIBES ROTUNDIFOLIUM Michx. M. p. 487. Rocky woods. Early summer.
Bucks—Nockamixon (Fr.) (Ws.); Haycock Mountain (Ws.). *Berks*—Monocacy (Me.). *Lehigh*—Idlewild, along the Lehigh (Kr.). *Northampton*—Easton (Ca.).
4. RIBES FLORIDUM L'Her. *Wild Black Currant*. M. p. 488. Woods. Spring.
Philadelphia—Wissahickon (Je.), Shawmont (Sa.). *Bucks*—Near Sellersville (Fr.), Narrowsville (Li.). *Montgomery*—Flat Rock Tunnel (Te.). *Delaware*—Lansdowne (Pe.), Valley of Darby Creek (B. Sm.), Middletown (W. Tr.). *Chester*—(P.). *Northampton*—Easton, Porter (B. C.). *Lehigh*—Coplay, cult. (Kr.).
Mercer—Princeton and along Assanpink Creek (C.). *Somerset*—Peapack (C.).
New Castle—Riddles, Tatnall; Pyle's Mill, T. Burris' Run and Centerville, Commons.
5. RIBES AUREUM Pursh. *Golden Currant*. M. p. 488. In cultivation. Spring.
RIBES RUBRUM L. *Red Currant*. M. p. 488. Escaped from cultivation. Spring.

Family 9. HAMAMELIDACEAE Lindl. Witch-Hazel Family.

Ovules 1 in each cavity; flowers perfect or polygamous; shrubs or small trees; fruit not spiny. 1. *Hamamelis*.
Ovules several in each cavity; flowers monœcious; large trees; fruit globular, spiny. 2. *Liquidambar*.

1. HAMAMELIS L.

1. HAMAMELIS VIRGINIANA L. *Witch-hazel*. M. p. 489. Damp woods. Autumn.

2. LIQUIDAMBAR L.

1. LIQUIDAMBAR STYRACIFLUA L. *Sweet-gum*. M. p. 489.
Philadelphia—Valley of Delaware. *Bucks*—Bristol (Fr.). *Delaware*—U. Darby, Tinicum (B. Sm.).

Family 10. PLATANACEAE Lindl. Plane Tree Family.

1. PLATANUS L.

1. PLATANUS OCCIDENTALIS L. *Sycamore, Buttonwood*. M. p. 490. Alluvial banks. Spring.

Family 11. **ROSACEAE** B. Juss. **Rose Family.**

Fruit not enclosed in a hollow receptacle, the so-called calyx.

Pistils few, seldom more than 5, ripening into 2-4-seeded follicles.

Follicles dehiscent along both sutures; seeds shining.

1. *Opulaster*.

Follicles dehiscent along one suture; seeds dull.

Pistils alternate with the calyx-lobes.

2. *Spiraea*.

Pistils opposite the calyx-lobes, petals white.

3. *Porteranthus*.

Pistils numerous or rarely few, ripening into 1-2-seeded drupelets or achenes.

Pistils ripening into drupelets crowded on the receptacle.

Drupelets very pulpy.

4. *Rubus*.

Drupelets nearly dry, enclosed by the calyx.

5. *Dalibarda*.

Pistils ripening into achenes.

Style deciduous.

Style nearly basal; ovules ascending or nearly erect, orthotropous; leaves pinnate.

6. *Drymocallis*.

Style lateral; ovules ascending and amphitropous.

Receptacle much enlarged and red in fruit; leaves trifoliate.

Receptacle pulpy, edible; petals white.

7. *Fragaria*.

Receptacle not pulpy; petals yellow.

8. *Duchesnea*.

Receptacle not enlarged in fruit; leaves interruptedly pinnate; petals yellow.

9. *Argentina*.

Style terminal or nearly so.

Pistils numerous; ovules pendulous and anatropous.

10. *Potentilla*.

Pistils 2-6; ovules basal, erect.

11. *Waldsteinia*.

Style persistent on the achene.

12. *Germ.*

Fruit 1-4 achenes, enclosed in the persistent, dry receptacle; herbs.

Calyx bearing hooked prickles; petals 5.

13. *Agrimonia*.

Calyx not prickly; petals none.

14. *Sanguisorba*.

Fruit, numerous achenes, enclosed in the fleshy receptacle; shrubs with pinnate leaves.

15. *Rosa*.1. **OPULASTER** Medic.

1. **OPULASTER OPULIFOLIUS** (L.) Kuntze. *Ninebark*. M. p. 492. Rocky banks of streams; often cultivated. Early summer.

2. **SPIRAEA** L.

Glabrous or nearly so throughout.

1. *S. salicifolia*.

Twigs and lower surfaces of the leaves woolly-pubescent.

2. *S. tomentosa*.

1. **SPIRAEA SALICIFOLIA** L. *Meadow-sweet*. M. p. 492. Wet or low grounds. Summer.

2. **SPIRAEA TOMENTOSA** L. *Hardhack, Steeple-bush*. M. p. 492. Low grounds. Summer.

3. **PORTERANTHUS** Britton.

1. **PORTERANTHUS TRIFOLIATUS** (L.) Britton. *Indian-physic, Bowman's-root*. M. p. 493. Rich woods. Summer.

Philadelphia—Wissahickon (Me.) (Re.) (Te.), Fairmount Park (Wn.).
Bucks—Argus (Fr.), Lumberton, Delaware shore (Ws.). *Montgomery*
 —Shannonville (Cr.), Mill Creek, Walnut Hill (VP.). *Delaware*—
 Media (Gi.) (Ws.), Wawa (Ja.) (U. C. S.), Valley of Darby Creek (B).

Sm.), Greenwood near Media (Te.), Chester (W. Tr.). *Chester*—West Chester (He.), Westtown, South Valley Hill near Malvern (Le.). *Lancaster*—York Furnace (Ja.) (Li.). *Berks*—Wernersville (Te.), Reading (Wn.). *Lehigh*—Deily's (Kr.). *Northampton*—(P.). *Dauphin*—Paxtang (Mar.).

New Castle—Naaman's Creek, Rockford, Wooddale, Mount Cuba.

4. RUBUS L. RASPBERRY. BLACKBERRY. BRAMBLE.

Leaves simple, crenate, or palmately lobed.

1. *R. odoratus*.

Leaves 3-7 foliolate.

Fruit falling away from the dry receptacle. Raspberries.

Herbaceous, usually unarmed, 1-3 flowered; leaves not white beneath.

2. *R. Americanus*.

Shrubby; many-flowered; leaves white-pubescent beneath.

3. *R. occidentalis*.

Fruit persistent on the fleshy receptacle. Blackberries and dewberries.

Erect, recurved or ascending; fruit black.

Leaflets lacinate or deeply incised.

4. *R. lucinidus*.

Leaflets serrate or slightly incised.

5. *R. cuneifolius*.

Leaves white-woolly beneath.

Leaves not white-woolly beneath.

Inflorescence distinctly glandular.

Fruit broadly oval or nearly spherical, very pulpy.

6. *R. nigrobaccus*.

Fruit narrowly oblong or thimble-shaped.

7. *R. Allegheniensis*.

Inflorescence and leaves decidedly villous, scarcely glandular.

Terminal leaflet one-half longer than the lateral ones, oblong to oblong-ovate.

8. *R. ostryifolius*.

Terminal leaflet slightly larger than the lateral ones, obovate or rhombic obovate.

9. *R. frondosus*.

Inflorescence slightly villous.

Plant low, almost herbaceous, weakly, prickly.

10. *R. Randii*.

Plant tall and shrubby.

11. *R. argutus*.

Trailing or decumbent.

Stem prickly; fruit black.

Inflorescence usually many-flowered.

Terminal leaflet one-half longer than the lateral ones, oblong or oblong-ovate, acute.

8. *R. ostryifolius*.

Terminal leaflet only slightly longer than the lateral ones, ovate, acuminate.

12. *R. procumbens*.

Inflorescence usually 1-2-flowered.

Leaflets cuneate at the base; glabrous.

13. *R. subuniflorus*.

Leaflets rounded or cordate at the base, pubescent beneath.

14. *R. Baileyanus*.

Stem bristly or weakly prickly; fruit red or, when ripe, almost black.

Leaflets thick; inflorescence stout, strongly bristly or weakly prickly.

15. *R. nigricans*.

Leaflets thin; inflorescence sparingly and weakly bristly.

16. *R. hispidus*.

1. *RUBUS ODORATUS* L. *Purple Flowering Raspberry*. M. p. 495. Rocky banks. Summer.
Philadelphia—Wissahickon (VP.), Fairmount Park (Wn.). *Bucks*—Rock Hill (Fr.) (Ja.) (Mac.), Point Pleasant, Delaware shore, Centerbridge (Ws.), Nockamixon (Wn.). *Montgomery*—Shannonville (Cr.), Schwenksville (U. C. S.), Skippack Creek (VP.). *Chester*—Coatesville, H. E. Stone (B. C.), Falls of French Creek (Sa.) (S. Tr.). *Lancaster*—Octoraro Creek (Pr.). *Berks*—Hamburg (He.) (Ke.) (Li.), Wernersville (Te.), Reading (Wn.). *Lehigh*—All along the Lehigh (Kr.). *Northampton*—Easton, Porter (B. C.). *Dauphin*—Steelton (Wn.).
Hunterdon—Locktown, Pittstown (C.).
New Castle—Rockford, Mount Cuba, scarce.
2. *RUBUS AMERICANUS* (Pera.) Britton. *Dwarf Raspberry*. M. p. 495. Swamps. Summer.
Bucks—Near Quakertown (Fr.).
3. *RUBUS OCCIDENTALIS* L. *Black Raspberry, Thimbleberry*. M. p. 496. Woods and roadsides. Early summer.
4. *RUBUS LACINIATUS* Willd. M. p. 496. Escaped from cultivation. Summer.
Bucks—Bristol (Br.) (Fr.), Point Pleasant (Fr.).
5. *RUBUS CUNEIFOLIUS* Pursh. *Sand Blackberry*. M. p. 496. Sandy soil. Early summer.
Bucks—Penn Valley (Cr.) (Wn.). *Delaware*—Tinicum (St.). *Chester*—Northwest of Coatesville (St.). *Lancaster*—Pleasant Grove (Ca.).
New Jersey—Common.
New Castle—Blackbird Head.
6. *RUBUS NIGROBACCUS* Bailey. *Common Blackberry*. M. p. 496. Borders of thickets. Early summer.
7. *RUBUS ALLEGHENIENSIS* Porter. M. p. 496. Dry soil. Early summer.
Montgomery—Willow Grove (St.). *Chester*—Near Coatesville, near West Chester (St.). *Northampton*—Pen Argyl (He.).
8. *RUBUS OSTREYIFOLIUS* Rydb. M. p. 497. Near seashore. Summer.
Cape May—Stone Harbor (Br.).
9. *RUBUS FRONDOSUS* Bigel. M. p. 497. Borders of thickets. Summer.
10. *RUBUS RANDII* (Bailey) Rydb. M. p. 497. Summer.
Philadelphia—(P.). *Bucks*—(P.). *Montgomery*—(P.). *Delaware*—Tinicum (St.). *Chester*—(P.). *Lancaster*—(P.). *Northampton*—(P.).
11. *RUBUS ARGUTUS* Link. M. p. 497. Early summer.
Delaware—Tinicum (St.).
Burlington—Speedwell (St.).
12. *RUBUS PROCUMBENS* Muhl. *Dewberry*. M. p. 498. Dry fields. Spring.
13. *RUBUS SUBUNIFLORUS* Rydb. M. p. 498. Sandy or dry soil. Near the coast. Early summer.
Chester—Christiana, W. Bradford (St.).
Burlington—Medford (St.).
14. *RUBUS BAILEYANUS* Britton. M. p. 498. Dry woods and thickets. Early summer.

Bucks—Penn Valley, Dr. N. L. Britton (Fr.). *Montgomery*—Willow Grove (St.). *Delaware*—Tinicum (Fr.). *Chester*—Coatesville (St.). *Lancaster*—(P.). *Northampton*—(P.).

15. *RUBUS NIGRICANS* Rydb. M. p. 498. Open grounds.

Bucks—Tullytown, Bicknell (Fr.).

16. *RUBUS HISPIDUS* L. *Running Swamp Blackberry*. M. p. 498. Swamps or low grounds. Summer.

RUBUS FRUTICOSUS L. Ballast and escaped from cultivation. Summer.

Camden—Kaighn's Point (Ja.).

New Castle—18th and Washington streets, Wilmington.

5. DALIBARDA L.

1. *DALIBARDA REPENS* L. M. p. 499. Woods. Summer.

Lehigh—Blue Ridge, Heidelberg (Kr.).

Gloucester—Swedesboro (Li.) (Wa.) (He.).

6. DRYMOCALLIS Fourr.

1. *DRYMOCALLIS ARGUTA* (Pursh.) Rydb. *Cinquefoil, Five-finger*. M. p. 499. Rocky hills. Summer.

Bucks—New Hope (Wa.). *Delaware*—Lima (S. Tr.), Lewis Mill, Crum Creek (VP.). *Lancaster*—Safe Harbor (Ca.). *Northampton*—(P.).

Burlington—Near Riverton (Ha.). *Camden*—Winslow Junction (Mac.) (Wn.). *Hunterdon*—Lambertville, Rosemont, Bull's Island (C.).

7. FRAGARIA L. STRAWBERRY.

Achenes imbedded in pits on the fruit.

1. *F. Virginiana*.

Achenes borne on the surface of the fruit; leaflets subsessile.

Stout; leaflets thickish; plant naturalized; fruit ovoid to hemispheric.

2. *F. vesca*.

Slender; leaflets thin; native plant; fruit ovoid to conic.

3. *F. Americana*.

1. *FRAGARIA VIRGINIANA* Duchesne. M. p. 500. Dry soil. Spring.

2. *FRAGARIA VESCA* L. M. p. 501. Fields and roadsides. Spring.

3. *FRAGARIA AMERICANA* (Porter) Britton. M. p. 501. Rocky woods. Early summer.

Bucks—Nockamixon (He.). *Lancaster*—(P.).

8. DUCHESNEA J. E. Smith.

1. *DUCHESNEA INDICA* (Andr.) Focke. *Indian Strawberry*. M. p. 501. Waste places. Spring and summer.

Philadelphia—Bartram's Garden, Woodland's Cemetery (Gi.), Gray's Ferry (Le.), Walnut Hill, Wissahickon (VP.). *Bucks*—Narrowsville, Durham (Fr.). *Delaware*—Darby, Dr. Geo. Smith (B. C.), Darby Creek (VP.). *Lancaster*—(P.). *Northampton*—Easton, Porter (B. C.).

Burlington—Moorestown (Sts.). *Camden*—Haddonfield (Wa.). *Mer-*
cer—Trenton (C.).

New Castle—Brandywine Park.

9. ARGENTINA Lam.

1. ARGENTINA ANSERINA (L.) Rydb. *Silver-weed*. M. p. 502. Ballast. Summer.

Philadelphia—Greenwich Point (Te.).
Camden—Kaighn's Point.

10. POTENTILLA L. CINQUEFOIL.

Flowers cymose; erect or ascending herbs.

Leaflets 5-7.

Leaflets 3.

1. *P. argentea*.

2. *P. Monspeliensis*.

Flowers solitary, axillary; creeping or ascending plants.

Stem long-ascending; first flower from the axil of the second stem-leaf or some subsequent leaf.

3. *P. Canadensis*.

Plant low, less than 1 dm. high; first flower from the axil of the first stem-leaf.

4. *P. pumila*.

1. POTENTILLA ARGENTEA L. M. p. 503. Dry, barren fields. Summer.

Bucks—Sellersville (Fr.). *Delaware*—Swarthmore (Fu.) (Pr.). *Northampton*—(P.).

Camden—Ballast (C.). *Gloucester*—Mullica Hill (C.). *Ocean*—Forked River (Mac.). *Monmouth*—North side of Deal Lake, Belmar (Wn.), Phalanx (C.). *Mercer*—Trenton (C.). *Hunterdon*—Lambertville (C.).

2. POTENTILLA MONSPELIENSIS L. M. p. 504. Dry soil. Summer.

3. POTENTILLA CANADENSIS L. *Wild Strawberry*. M. p. 506. Dry soil. Summer.

4. POTENTILLA PUMILA Poir. M. p. 506. Poor soil. Summer.

11. WALDSTEINIA Willd.

1. WALDSTEINIA FRAGARIOIDES (Michx.) Tratt. *Barren Strawberry*. M. p. 506. Wooded hillsides. Early summer.

Bucks—Sellersville (Fr.). *Montgomery*—Green Lane (VP.). *Berks*—Hamburg (Cr.). *Northampton*—Easton (Ca.).

12. GEUM L. AVENS.

Calyx-lobes strongly reflexed; style not plumose, sometimes hispid at base.

Flowers yellow, 4 mm. broad; head of fruit stalked, calyx bractless.

1. *G. vernum*.

Flowers 6-20 mm. broad; head of fruit sessile, calyx bracteolate.

Petals white, or very nearly so, obovate.

Plant softly-pubescent or glabrate; receptacle bristly.

2. *G. Canadense*.

Plant rough-pubescent; receptacle glabrous or downy.

3. *G. Virginianum*.

Petals cream-yellow, narrowly oblong, scarcely exceeding the sepals.

4. *G. flavum*.

Petals yellow, broadly obovate or orbicular.

Segments or lobes of upper stem-leaves broadly rhombic ovate; petals 4-6 mm. long.

5. *G. macrophyllum*.

Segments or lobes of upper stem-leaves oblanceolate; petals 6-8 mm. long.

6. *G. strictum*.

Calyx-lobes erect or spreading; style plumose below; flowers purple, nodding.

7. *G. rivale*.

1. *GEUM VERNUM* (Raf.) T. & G. M. p. 507. Shaded places. Spring.
Philadelphia—Lower Wingohocking Creek (St.). *Bucks*—Quakertown (Cr.) (Le.). *Delaware*—Glen Mills (S. Tr.). *Lancaster*—Near Lancaster, A. A. Heller (B. C.). *Mercer*—Princeton (C.).
2. *GEUM CANADENSE* Jacq. M. p. 507. Shaded places. Summer.
3. *GEUM VIRGINIANUM* L. M. p. 507. Low grounds. Summer.
4. *GEUM FLAVUM* (Porter) Bicknell. M. p. 508. Woods. Summer.
Bucks—Rock Hill, Perkasio (Fr.), Solebury Twp., abundant (Ws.).
Delaware—Swarthmore, abundant (Ws.). *Chester*—(P.). *Northampton*—(P.).
5. *GEUM MACROPHYLLUM* Willd. M. p. 508. Low grounds. Summer.
Bucks—Andalusia (Br.).
6. *GEUM STRICTUM* Ait. M. p. 508. Moist meadows. Summer.
Philadelphia—Banks of Schuylkill, Dr. J. B. Brinton (Ha.). *Bucks*—Andalusia, Mart. (B. C.), Quakertown (Cr.), near Sellersville (Fr.).
Delaware—Castle Rock, Concord (Fu.), Philadelphia Yacht Club (Ke.),
Chester (W. Tr.). *Chester*—Near West Chester (He.). *Lancaster*—(P.). *Northampton*—Wind Gap, Pen Argyl (He.).
Camden—Camden (C.). *Gloucester*—Mickleton (C.). *Monmouth*—Freehold (C.).
Mercer—Trenton (C.). *Somerset*—Peapack (C.).
7. *GEUM RIVALE* L. M. p. 508. Bogs and wet meadows. Summer.
Chester—(P.).

13. *AGRIMONIA* L. *AGRIMONY*.

- Racemes and leaves beneath with loose, spreading hairs or glabrous.
 Roots not tuberous; fruit large, turbinate, with numerous radiating bristles.
 1. *A. hirsuta*.
 Roots tuberous; fruit very small, hemispheric, with few ascending or erect bristles.
 2. *A. striata*.
- Racemes and leaves beneath closely and softly pubescent.
 Roots tuberous; stems pubescent; leaves not glandular-dotted beneath.
 3. *A. mollis*.
 Roots not tuberous; stems hirsute; leaves glandular-dotted beneath.
 Leaflets mostly 7-9; fruit large, the bristles connivent.
 4. *A. Brittoniana*.
 Leaflets mostly 11-17; fruit small, the bristles radiate.
 5. *A. parviflora*.
1. *AGRIMONIA HIRSUTA* (Muhl.) Bicknell. M. p. 511. Woods and thickets. Summer.
 2. *AGRIMONIA STRIATA* Michx. M. p. 511. Dry woods. Summer.
Bucks—(P.). *Lancaster*—York Furnace (St.). *Northampton*—Easton, Porter (B. C.).
 3. *AGRIMONIA MOLLIS* (T. & G.) Britton. M. p. 511. Dry woods and thickets. Summer.
Bucks—Sellersville (Fr.). *Montgomery*—Ivy Rock (St.). *Delaware*—Crum Creek (St.). *Lancaster*—(P.). *Northampton*—(P.).
 4. *AGRIMONIA BRITTONIANA* Bicknell. M. p. 511. Thickets and roadsides. Summer.
Northampton—(P.).
 5. *AGRIMONIA PARVIFLORA* Soland. M. p. 512. Moist or dry soil. Summer.

14. SANGUISORBA L. BURNET.

Flowers capitate, greenish; stamens numerous; leaflets 12-20 mm. long.

1. *S. Sanguisorba*.

Flowers spicate, white; stamens 4; leaflets 25-75 mm. long.

2. *S. Canadensis*.

1. SANGUISORBA SANGUISORBA (L.) Britton. M. p. 512. Fields, rocks and ballast. Summer.

Philadelphia—Philadelphia, Mart. (B. C.), Girard Point (Te.). *Bucks*—Rock Hill (Fr.). *Lehigh*—Salisbury (Kr.). *Northampton*—Easton, Porter (B. C.).

Burlington—Moorestown (C.). *Camden*—Kaighn's Point (Ja.).

2. SANGUISORBA CANADENSIS L. M. p. 512. Bogs and wet meadows. Summer.

Bucks—Pipersville, Bristol (Fr.), Tullytown (Ja.) (Sa.). *Delaware*—Williamson (Fu.) (Mac.) (Wn.), Haverford College (Le.), Valley of Darby Creek (B. Sm.), near Newtown Square (VP.). *Chester*—Oxford (Cr.), near Coatesville (St.), Westtown (W. Tr.). *Lancaster*—(P.). *Northampton*—(P.).

Burlington—Burlington (C.), near Moorestown (Sts.). *Camden*—Camden (C.). *Gloucester*—Near Mullica Hill (C.), near Mickleton (He.), Swedesboro (Li.). *Salem*—Auburn (Wa.). *Monmouth*—Freehold (C.). *Mercer*—Trenton (Wn.), Hightstown, Princeton (C.). *Middlesex*—Sand Hill, South Amboy (C.).

New Castle—Thompson's, Moore's, etc. Not rare.

15. ROSA L. ROSE.

Sepals persistent, erect on the fruit.

1. *R. blanda*.

Sepals deciduous, spreading.

Leaflets finely serrate; spines stout, recurved.

2. *R. Carolina*.

Leaflets coarsely serrate.

Infrastipular spines nearly straight; native bushy species.

Stems with scattered prickles or naked.

Leaflets 7-9, shining above; flowers corymbose; spines stout.

3. *R. lucida*.

Leaflets 5-7; flowers solitary or few; spines slender.

4. *R. humilis*.

Infrastipular spines stout, hooked; introduced wand-like or climbing species.

Leaflets somewhat pubescent beneath, serrate.

5. *R. canina*.

Leaflets very glandular beneath, doubly serrate.

6. *R. rubiginosa*.

1. ROSA BLANDA Ait. M. p. 513. Moist, rocky places. Summer.

Bucks—Hilltown (Fr.). *Delaware*—Middletown, Chrome Run (B. Sm.). *Lancaster*—(P.).

2. ROSA CAROLINA L. *Swamp Rose*. M. p. 513. Borders of swamps and streams. Summer.

3. ROSA LUCIDA Ehrh. M. p. 514. Margins of swamps or moist places. Early summer.

4. ROSA HUMILIS Marsh. *Pasture Rose*. M. p. 514. Dry or rocky soil. Early summer.

- 4a. *ROSA HUMILIS VILLOSA* Best. M. p. 514.
Bucks—Point Pleasant, Dr. Geo. Best (Fr.).
5. *ROSA CANINA* L. *Dog Rose*. M. p. 514. Roadsides and waste places.
 Summer.
6. *ROSA RUBIGENOSA* L. *Sweetbrier, Eglantine*. M. p. 514. Roadsides and
 waste places. Early summer.
- ROSA SETIGERA* Michx. *Prairie Rose*. M. p. 513. Escaped from
 cultivation. Early summer.
- ROSA CINNAMOMEA* L. *Cinnamon Rose*. M. p. 514. Occasionally
 along roadsides. Summer.

Family 12. POMACEAE L. Apple Family.

Ripe carpels papery or leathery.

Cavities of the ovary (carpels) as many as the styles.

Flesh of the pome with grit-cells.

Flesh of the pome without grit-cells.

Cymes simple; trees.

Cymes compound; shrubs.

Cavities of the ovary becoming twice as many as the styles.

1. *Pyrus*.

2. *Malus*.

3. *Aronia*.

4. *Amelanchier*.

5. *Crataegus*.

Ripe carpels bony.

1. PYRUS L.

1. *PYRUS COMMUNIS* L. *Pear*. M. p. 515. Thickets and woods, escaped
 from cultivation. Spring.

2. MALUS Hill. APPLE.

Leaves glabrous when mature.

Leaves oblong, lanceolate or oval, narrowed at the base.

Leaves ovate, cordate or rounded at the base.

Leaves persistently pubescent or tomentose beneath.

1. *M. angustifolia*.

2. *M. coronaria*.

3. *M. Malus*.

1. *MALUS ANGUSTIFOLIA* (Ait.) Michx. M. p. 516. In thickets. Spring.

Cape May—Cold Spring, C. F. Manderson (Br.).

2. *MALUS CORONARIA* (L.) Mill. *Crab Apple*. M. p. 516. Thickets. Spring.

Philadelphia—Wissahickon (Je.), West Philadelphia (Mac.). *Bucks*—
Perkasie, Sellersville (Fr.). *Delaware*—Castle Rock (B. Sm.), Concord
 (W. Tr.), Painters' Arboretum (Ke.). *Chester*—(P.). *Lancaster*—
 (P.). *Dauphin*—Harrisburg, Steelton (Wn.).

Mercer—Trenton (C.). *Somerset*—Peapack (C.). *Hunterdon*—Hope-
 well, Pittstown, Rosemont (C.).

New Castle—Stanton, Pencader. Scarce.

3. *MALUS MALUS* (L.) Britton. *Apple*. M. p. 516. Escaped from cultiva-
 tion. Spring.

3. ARONIA Medic. CHOKEBERRY.

Cyme and lower surfaces of the leaves wooly.

Cymes and leaves glabrous or nearly so; fruit black or purplish.

1. *A. arbutifolia*.

2. *A. nigra*.

1. *ARONIA ARBUTIFOLIA* (L.) Medic. M. p. 517. Swamps and damp thick-
 ets. Spring.

2. *ARONIA NIGRA* (Willd.) Britton. M. p. 517. Swamps, low woods; also dry soil. Spring.

4. *AMELANCHIER* Medic. JUNE-BERRY, SHADBUSH, SERVICE-BERRY.

Leaves acute or acuminate at the apex; top of the ovary glabrous or nearly so.

Leaves ovate, oval or ovate-lanceolate, glabrous when mature; base cordate or rounded.

1. *A. Canadensis*.

Leaves oblong, oval, ovate or obovate, rarely subcordate at base, densely white-woolly beneath, at least when young.

2. *A. Botryapium*.

Leaves rounded, obtuse or subacute at the apex; top of ovary woolly.

3. *A. spicata*.

1. *AMELANCHIER CANADENSIS* (L.) Medic. M. p. 517. Dry, open woodlands. Spring.

2. *AMELANCHIER BOTRYAPIUM* (L. f.) DC. M. p. 517. Low, moist grounds or swampy woods. Spring.

3. *AMELANCHIER SPICATA* (Lam.) Dec. M. p. 517. Dry, rocky places. Spring.

Bucks—Ridge Road near Tylersport (Fr.), Naseville (Ja.). *Northampton*—Pot Rock in Delaware above Easton, Porter (B. C.).

5. *CRATAEGUS*¹ L. HAWTHORN.

CONSPECTUS OF THE NATURAL GROUPS.

- A. Indigenous species; veins of the leaves attaining the points of the lobes only.

1. Nutlets without ventral cavities.

Petioles short, glandless or with occasional minute glands; leaves obovate to oblong, oval or rarely ovate, cuneate at the base; corymbs many-flowered.

Leaves coriaceous, dark green and shining above, mostly quite glabrous, usually serrate only above the middle, their veins thin except on vigorous shoots and sometimes within the parenchyma; corymbs glabrous; fruit oblong to subglobose; nutlets 1-3, generally obtuse and rounded at the ends, prominently ridged at the back.

I. *Crus-galli*.

Leaves membranaceous to subcoriaceous, mostly acute or occasionally rounded at the apex, their veins prominent; corymbs villose; fruit usually short-oblong, often conspicuously punctate; flesh dry and mealy; nutlets 2-5, prominently ridged on the back.

II. *Punctatae*.

Petioles elongated, usually slender (short and stout in *Uniflorae*), glandular only toward the apex (in *Intricatae* sparingly glandular throughout).

Leaves mostly broad at the base.

Corymbs many-flowered (few-flowered in some species of *Pruinosae*).

Fruit subglobose to short-oblong, rarely pyriform, red or green, often slightly 5-angled, generally pruinose, especially during the summer; leaves blue-green, thin and firm to subcoriaceous or rarely coriaceous.

III. *Pruinosae*.

Fruit short-oblong to obovate, ovate or subglobose,

¹Prepared by Mr. B. H. Smith. Based mainly upon the studies of Prof. C. S. Sargent in THE GENUS *CRATAEGUS* IN NEW CASTLE COUNTY, DELAWARE, Botanical Gazette, xxxv, 93-110, February, 1906, and *CRATAEGUS* IN EASTERN PENNSYLVANIA, Proceedings of the Academy of Natural Sciences of Philadelphia, lvii.

red or scarlet, mostly lustrous, usually 1-1.5 cm. long; stamens 10 or less; anthers rose-color, purple or red; leaves mostly membranaceous, hirsute on the upper surface while young.

IV. *Tenuifoliae*.

Fruit subglobose, obovate or short-oblong, scarlet, 1.5-2 cm. long; flesh thick; nutlets thick, pointed at the ends; usually slightly ridged; corymbs tomentose; leaves membranaceous, broad, cuneate to rounded or cordate at the base, more or less pubescent below; stamens 10 or less; anthers white or pink.

V. *Molles*.

Fruit short-oblong to subglobose, 1.5-2 cm. long, scarlet, lustrous; flesh succulent; nutlets 3-5, grooved and occasionally ridged on the back; corymbs slightly villose; leaves large, membranaceous, oblong, more or less acutely lobed; stamens 10 or less; anthers rose-color.

VI. *Flabellatae*.

Leaves cuneate at the base (rarely broad in *Intricatae*), subcoriaceous or membranaceous.

Corymbs many- or few-flowered; glabrous or villose; fruit subglobose, 9-12 mm. in diameter, leaves dark green and lustrous on their upper surface.

VII. *Coccineae*.

Corymbs usually few-flowered; fruit subglobose to short-oblong or obovate, 1-1.5 cm. long, greenish-yellow, orange-color or red; nutlets 3-5, rounded at the ends, generally conspicuously ridged on the back.

VIII. *Intricatae*.

Flowers solitary or in 2- or 3-flowered, simple corymbs; calyx-lobes large and foliaceous; stamens 20; anthers pale yellow; leaves obovate, nearly sessile; small shrubs.

IX. *Uniflorae*.

2. Nutlets with longitudinal cavities on their ventral faces; fruit pyriform to subglobose or short oblong, 1-1.5 cm. in diameter, lustrous, orange or scarlet; nutlets 2 or 3, usually obtuse at the ends, prominently ridged on the back.

X. *Tomentosae*.

I. CRUS-GALLI.

Stamens 10, rarely 12-15.

Anthers rose-color.

Primary veins within the parenchyma, leaves obovate cuneiform, mostly rounded at the apex; stamens 10; fruit short-oblong, often covered with a glaucous bloom 8-12 mm. long; nutlets 2.

1. *C. Crus-galli*.

Primary veins without the parenchyma, thin but conspicuous.

Leaves obovate to oval, acute at the apex; stamens 15; fruit short-oblong, dull red covered with a glaucous bloom 1-1.2 cm. long; nutlets 2.

2. *C. rivalis*.

Leaves oblong, cuneate to ovate or rarely obovate, acute or rarely rounded at the apex; stamens 10-13; fruit short-oblong to subglobose, dark crimson, lustrous 1.2-1.5 cm. long; nutlets 3-5.

3. *C. Canbyi*.

Anthers pale yellow.

Leaves obovate, acute, acuminate or rarely rounded at the apex, their primary veins mostly within the parenchyma; stamens 5-10, rarely 12; fruit short-oblong, 1-1.2 cm. long, dark dull crimson; nutlets 1 or 2.

4. *C. Arduennae*.

Leaves obovate-cuneate, short-pointed or rarely rounded at the apex, their primary veins very slender, mostly without the parenchyma; stamens 8-10; fruit subglobose, dark crimson, rather lustrous 8-9 mm. in diameter; nutlets 1 or 2.

5. *C. Bartramiana*.

Stamens 20; leaves obovate, acute; fruit oblong, bright crimson.

6. *C. Pennypackeri*.

II. PUNCTATAE.

Anthers rose-color or yellow; stamens 20; leaves obovate, often acutely lobed above the middle, especially on vigorous shoots, more or less villose below; fruit on short pedicels, flattened at the ends, marked by large pale dots, dull red or bright yellow. 7. *C. punctata*.

Anthers rose-color; stamens 10-20; leaves oblong-obovate to oval, glabrous at maturity; fruit on elongated, slender pedicels, occasionally slightly obovate, dark brick-red marked by large pale dots. 8. *C. pausiaca*.

III. PRUINOSAE.

Stamens 20.

Anthers rose-color to pink or red.

Corymbs glabrous; fruit subglobose.

Corymbs many-flowered.

Leaves elliptical, fruit subglobose, green and pruinose when fully grown, becoming dark red and lustrous at maturity, 1.2-1.7 cm. in diameter; anthers large, light rose-color. 9. *C. pruinosa*.

Leaves ovate, mostly rounded at the broad base; fruit hard and green, 1-1.2 cm. in diameter; anthers red. 10. *C. austera*.

Corymbs few-flowered.

Leaves ovate to elliptic; fruit depressed-globose, frequently swollen and mamillate at the middle, scarlet, often dark olive-green toward the apex, 1.2-1.4 cm. in diameter; anthers light pink. 11. *C. bona*.

Leaves ovate.

Leaves cuneate at the base; fruit short-oblong to ovate; conspicuously 5-angled and mamillate below the middle, bright plum-color, 1.3-1.4 cm. long. 12. *C. areana*.

Leaves rounded to subcordate at the base; fruit depressed-globose, not mamillate below the middle, 1.7-2 cm. in diameter; anthers pale pink. 13. *C. philadelphica*.

Leaves ovate to deltoid, usually rounded or truncate at the base; fruit short-oblong to subglobose, bright scarlet; anthers light rose-color. 14. *C. felix*.

Corymbs villose; leaves slightly scabrate above.

Leaves ovate, villose below towards the base of the midribs and on the petioles; fruit short-oblong to subglobose, olive-green, rarely with a rose-tinted cheek, 9-10 mm. in diameter; anthers light pink. 15. *C. virella*.

Leaves broadly ovate, villose on the midribs while young; fruit subglobose, retuse at the base, bright green until late in the season, turning scarlet, 1.2-1.4 cm. in diameter; anthers light red. 16. *C. ruthiana*.

Leaves oblong to elliptic; villose on the upper surface and on the base of the midribs while young; fruit depressed-globose, broader than high, bright green and lustrous until late in the autumn, ultimately becoming bright cherry-red. 17. *C. comata*.

Anthers pale yellow.

Fruit short-oblong to ovate, dull green, 8-9 mm. long; leaves ovate. 18. *C. jejuna*.

Fruit globose to depressed-globose or round-ovate, deep dark red at maturity, 1-1.6 cm. in diameter.

Leaves broadly ovate to deltoid-ovate; arborescent, 5-6 m. high. Calyx-tube long; fruit dry and mealy. 19. *C. uplandia*.

Calyx-tube short; fruit bitter and acid.

20. *C. callosa*.

Leaves narrow-ovate to oblong-ovate; shrubby, usually 2-5 m. high.

Flowers about 1.2 cm. in diameter, in compact, mostly 4-7-flowered corymbs; fruit often obovate.

21. *C. Cestrica*.

Flowers often 2 cm. in diameter, in lax 5-10-flowered corymbs.

22. *C. augusta*.

Fruit obovate, dull green tinged with red, 1-2 cm. long; leaves oblong-ovate.

23. *C. insueta*.

Stamens 10 or less.

Anthers pink, dark rose-color or purple.

Leaves smooth on the upper surface.

Leaves ovate to rhombic, cuneate at the base; fruit depressed-globose, crimson, slightly pruinose, 1-1.2 cm. in diameter; anthers pale pink.

24. *C. dissona*.

Leaves rhombic or occasionally oblong-ovate, deeply laciniately lobed; fruit oblong to short-oblong, crimson, covered with a thick glaucous bloom, about 1.2 cm. long; anthers purple.

25. *C. alacris*.

Leaves oval to ovate; cuneate at the base; fruit short-oblong to ovate, conspicuously mamillate at the base, dull red, covered with a glaucous bloom, 1-1.2 cm. in diameter; anthers purple.

26. *C. deducta*.

Leaves scabrate on the upper surface; anthers dark rose-color.

Pedicels glabrous.

Leaves ovate, as broad as long, truncate or rounded at the broad base; fruit depressed-globose, bright red, 1-1.2 cm. in diameter.

27. *C. deltoides*.

Leaves ovate, usually rounded or cuneate at the base; fruit obovate, greenish-red, with a crimson cheek, 1.2-1.5 cm. long.

28. *C. Fretschii*.

Leaves ovate to rhombic, rounded or cuneate at the base; fruit obovate, orange-red, 8-10 mm. long.

29. *C. seabriuscula*.

Pedicels villose; leaves ovate, usually rounded or truncate at the broad base, deeply lobed; fruit oblong to obovate, dull red, covered with a glaucous bloom, 1.4-1.5 cm. long.

30. *C. delicata*.

Anthers pale yellow; leaves rhombic to ovate, gradually narrowed below, or broadly cuneate at the entire base, membranaceous; fruit sub-globose, dark red.

31. *C. Delawareensis*.

IV. TENUIFOLIAE.

Fruit longer than wide.

Fruit oblong; anthers dark pink or purple.

Petioles 1.5-2 cm. long.

Leaf-lobes short, mostly pointing forward.

32. *C. tenella*.

Leaf-lobes long, spreading, often recurved.

33. *C. rufipes*.

Petioles 2-3 cm. long.

Pedicels elongated, slender; corymbs broad and open, leaves broad-ovate to nearly orbicular, yellow-green.

34. *C. lata*.

Pedicels short; corymbs compact; leaves ovate to ovate-oblong; blue-green.

Corymbs 4-6-flowered; mature leaves scabrate.

35. *C. Collinsiana*.

Corymbs 8-12-flowered; mature leaves smooth.

36. *C. pumila*.

Fruit obovate, ovate-oblong to subglobose.

Leaves 5-9-lobed.

Petioles slender, 2.5-3 cm. long; pedicels slender, elongated.

Corymbs open, 7-12-flowered.

Stamens 10; anthers rose-color; mature leaves scabrate. 37. *C. firma*.

Stamens 5-8; anthers rose-pink; fruit glaucous; mature leaves glabrous. 38. *C. Gruberi*.

Corymbs compact, 5-12-flowered; stamens 5-10; fruit scarlet.

Anthers dark rose-color or purple; pedicels elongated; leaves yellow-green. 39. *C. ampla*.

Anthers light purple; pedicels short; leaves blue-green. 40. *C. populnea*.

Petioles stout, 2-3 cm. long; pedicels stout; corymbs compact, 8-12-flowered.

Stamens 6-8; anthers purple; fruit yellowish-red; leaves thin. 41. *C. condensae*.

Stamens 10, anthers rose-color; fruit cherry-red; leaves thick. 42. *C. Moyeriana*.

Leaves 9-11-lobed.

Petioles 2-3 cm. long; anthers light pink or rose-color; ripe fruit with a glaucous bloom.

Stamens 5-7; fruit dark red. 43. *C. saturata*.

Stamens 8-10; fruit scarlet. 44. *C. miniata*.

Petioles 3-4 cm. long; anthers dark pink.

Corymbs narrow, compact; fruit 9-12 mm. long; petioles very slender. 45. *C. longipetiolata*.

Corymbs broad; fruit bright cherry-red, 1.3-1.5 cm. long; petioles stout. 46. *C. insokita*.

Fruit globose to depressed-globose; anthers dark pink or purple.

Fruit scarlet or bright crimson; leaves 9-11-lobed; corymbs 5-10-flowered, compact.

Leaves ovate-oblong, 4.5-6 cm. long; fruit 1.2-1.5 cm. in diameter. 47. *C. stolonifera*.

Leaves ovate, 3.5-4 cm. long; fruit 8-10 mm. in diameter.

48. *C. modica*.

Fruit with a glaucous bloom 1.2-1.5 cm. in diameter.

Leaves 7-9-lobed; petioles and pedicels stout; corymbs broad and open, 7-12-flowered. 49. *C. vittata*.

Leaf-lobes numerous; petioles and pedicels slender; corymbs compact, 5-9-flowered. 50. *C. sequax*.

V. MOLLES.

Stamens 10; anthers white.

51. *C. Tatnalliana*.

Stamens 5-6; anthers pink.

52. *C. digna*.

VI. FLABELLATAE.

Flowers cup-shaped, less than 2 cm. in diameter, on puberulous or glabrous pedicels; anthers rose-purple; fruit narrow-oblong. 53. *C. Holmesiana*.

Flowers not cup-shaped, 2 cm. or more in diameter, on villous pedicels; anthers light rose-color or pink; fruit subglobose to short-oblong.

54. *C. arcuata*.

VII. COCCINEAE.

Corymbs many-flowered; stamens 10 or less; anthers pale yellow; nutlets 2 or 3, obtuse at the ends, conspicuously rounded on the back.

Leaves subcoriaceous; fruit 1.2-1.5 cm. in diameter.

55. *C. coccinea*.

Leaves thin; fruit usually less than 1 cm. in diameter.

56. *C. Dodgei*.

Corymbs few-flowered; stamens 20, bright rose-color; nutlets 5, acute at the ends, obscurely grooved on the back. 57. *C. Evansiana*.

VIII. INTRICATAE.

Anthers pale yellow.

Stamens 10 or less.

Fruit subglobose to short-oblong.

Corymbs and pedicels villose; leaves scabrate.

Leaves ovate-oblong; fruit yellow with a red cheek, hairy at the ends. 58. *C. modesta*.

Leaves ovate to rhombic or oval; fruit greenish-orange, not hairy. 59. *C. abjecta*.

Corymbs and pedicels often glandular; leaves ovate to rhombic, concave-cuneate to full and rounded at the glandular base; corymbs compact, 3-5-flowered; fruit russet or copper-colored, or dull red at maturity. 60. *C. cuprea*.

Corymbs and pedicels glabrous.

Leaves ovate to oval.

Leaves scabrate; fruit dark crimson blotched with green. 61. *C. Bartoniana*.

Leaves smooth.

Fruit green, becoming dark clear red when fully ripe. 62. *C. nemoralis*.

Leaves oblong-ovate.

Fruit dark orange or reddish-orange; leaves yellow-green. 63. *C. saxatilis*.

Fruit red or orange-red; leaves blue-green. 64. *C. foetida*.

Fruit oblong-ovate, green, more or less blotched with red; leaves oblong to oval, smooth, yellow-green. 65. *C. apposita*.

Stamens 10-18; corymbs and pedicels glabrous, leaves oval to ovate; fruit globose to depressed-globose, dark red. 66. *C. reses*.

Anthers pale pink or rose-color.

Stamens 10 or less (rarely 13 in No. 10).

Fruit subglobose to short-oblong.

Leaves yellow-green.

Leaves ovate to oval.

Leaves gradually narrowed into a long cuneate base; stamens 8-13, usually 10; fruit green-bronze to red-bronze color, 1.2-1.4 cm. in diameter. 67. *C. inducta*.

Leaves full and rounded at the broad base; stamens 6-8; fruit green or bronze-yellow, about 1 cm. in diameter. 68. *C. definita*.

Leaves oval to obovate or rhombic; stamens 8-10; fruit orange or orange-red. 69. *C. Painteriana*.

Leaves blue-green, oval; fruit orange-red or red-bronze color. 70. *C. fulva*.

Fruit obovate.

Fruit dark crimson; leaves oval, usually lobed only on vigorous shoots; anthers cream-color faintly tinged with pink. 71. *C. pygmaea*.

Fruit reddish-orange color; leaves oval to oblong-ovate, more or less lobed; anthers light purple. 72. *C. infera*.

Anthers red; stamens 10; fruit oblong, dark red; leaves rhombic to obovate, yellow-green. 73. *C. Schweinitziana*.

Flowers unknown; fruit short-oblong to depressed-globose, bright canary-yellow; leaves oblong-ovate. 74. *C. Darlingtoniana*.

IX. UNIFLORAE.

Leaves crenately serrate; fruit yellow.

75. *C. uniflora*.

Leaves with straight teeth; fruit bronze-green.

76. *C. Smithii*.

X. TOMENTOSAE.

Leaves thin, with midribs and veins only slightly impressed on their upper surface; fruit obovate to oblong, orange or orange-red; stamens 20.

Anthers rose-color.

77. *C. tomentosa*.

Anthers yellow.

78. *C. struicilis*.

Leaves subcoriaceous to coriaceous, with midribs and veins deeply impressed on their upper surface, fruit subglobose to short-oval, usually scarlet. Stamens 20.

Anthers rose-color or pink.

Leaves villose below at maturity.

Pedicels villose; fruit long-stalked, in drooping clusters, often 15 mm. in diameter; leaves elliptical, acute at the ends; anthers light or dark rose-color.

79. *C. succulenta*.

Pedicels glabrous; fruit in erect pedicels, in few-fruited clusters, about 10 mm. in diameter; leaves rhombic to obovate; anthers pale pink.

80. *C. radiosa*.

Leaves nearly glabrous below at maturity, ovate to oval or obovate; fruit in erect glabrous pedicels, in few-fruited clusters, 7-8 mm. in diameter; anthers dark rose-color.

81. *C. micrantha*.

Anthers yellow; leaves rhombic to oval; fruit on drooping, slightly villose pedicels in many-fruited clusters.

82. *C. opica*.

Stamens 10; anthers pale yellow; leaves ovate to rhombic; fruit on erect or spreading glabrous pedicels in few-fruited clusters.

83. *C. Chadsfordiana*.

B. Naturalized species; veins of the leaves attaining the points of the lobes, and also extending to the sinuses; stamens 20, anthers rose-color.

Fruit depressed-globose, 6 mm. in diameter, bright crimson; leaves broadly ovate to triangular, 3-7-lobed, rounded or cordate at the entire base.

84. *C. cordata*.

Fruit ovoid, 8-9 mm. long, purple when mature; leaves obovate, broadly cuneate at the base, laciniately 3-7-lobed.

85. *C. Oxyacantha*.

1. *CRATAEGUS CRUS-GALLI L. *Cock-spur Thorn, New Castle Thorn*. M. p.

519. Common in old hedge-rows and thickets near the Delaware River. Spring.

1a. CRATAEGUS CRUS-GALLI PYRACANTHIFOLIA Ait. With narrower elliptical to obovate leaves and smaller bright red fruit. Not rare in eastern Pennsylvania and northern Delaware (Sargént).

1b. CRATAEGUS CRUS-GALLI OBLONGATA Sarg. Bot. Gaz., xxxv, 99, Feb., 1903.

Fruit oblong, often 2.5 cm. long; nutlets 1-2, acute at the ends.

Bucks—Durham (Fr.). Berks—North Heidelberg (Gruber).

New Castle—Meadow near Edgemoor (Canby).

1c. CRATAEGUS CRUS-GALLI CAPILLATA Sarg. Bot. Gaz., xxxv, 100, Feb., 1903.

Leaves oblong-ovate, rounded or acute at the apex, thin but firm in texture; corymbs slightly villose; fruit subglobose; nutlets 1, rarely 2.

Philadelphia—In a meadow at the head of Wissahickon Drive (Canby).

New Castle—In woods one mile east of Christiana (Canby).

2. CRATAEGUS RIVALIS Sarg. Proc. A. N. S. Philada., lvii.

Bucks—Meadows of Perkiomen Creek, Sellersville (Fr.).

3. *CRATAEGUS CANBYI* Sarg. Bot. Gaz., **xxxi**, 3 (1901).
Bucks—Point Pleasant, Tohikon Creek, Quakertown (Fr.). *Delaware*—
 Tunicum (B. Sm.).
4. *CRATAEGUS ARDUENNAE* Sarg. Bot. Gaz., **xxxv**, 378 (1903).
Berks—Near Kutztown (Gruber).
5. *CRATAEGUS BARTRAMIANA* Sarg. Proc. A. N. S. Philada., **lvii**.
Philadelphia—Hedge row along Bartram's Lane (Mac.).
6. *CRATAEGUS PENNYPACKERI* Sarg. Bot. Gaz., **xxxv**, 100, Feb., 1903.
New Castle—Near Stanton Station, J. T. Pennypacker (Canby).
7. *CRATAEGUS PUNCTATA* Jacq. M. p. 520.
New Castle—Banks of Brandywine below Smith's Bridge, White Clay
 Creek below Stanton (Canby).
- 7a. *CRATAEGUS PUNCTATA CANESCENS* Britton. M. p. 520. Densely hoary-
 tomentose on the under surface of the leaves, petioles and corymbs.
Bucks—Durham (Fr.).
8. *CRATAEGUS PAUSIACA* Ashe. Ann. Carnegie Mus., **I**, 390.
Bucks—Durham (Fr.). *Delaware*—Newtown, near Castle Rock;
 Lownes' Run, Springfield; meadows near Chad's Ford (B. Sm.).
9. *CRATAEGUS PRUINOSA* K. Koch. M. p. 521.
Philadelphia—Powers' Lane, Kingsessing (B. Sm.). *Berks*—Near
 West Leesport, Forge Hill, N. Heidelberg Twp. (Gruber).
10. *CRATAEGUS AUSTERA* Sarg. Proc. A. N. S. Philada., **lvii**.
Bucks—Near Sellersville, Hilltown, Deep Run, Perkasio (Fr.), College
 Hill, Easton, Porter (B. Sm.).
11. *CRATAEGUS BONA* Sarg. Proc. A. N. S. Philada., **lvii**.
Berks—Bluffs along Tulpehocken Creek, N. Heidelberg Twp. (Gruber).
12. *CRATAEGUS ARCANA* Beadle. Biltmore Bot. Studies, **I**, 122 (1902).
Bucks—Near Sellersville (Fr.). *Delaware*—Preston Run barrens, New-
 town; near Chad's Ford (B. Sm.). *Berks*—Bluffs of Tulpehocken Creek
 (Gruber).
New Castle—Woods opposite Farnhurst (Canby).
13. *CRATAEGUS PHILADELPHICA* Sarg. Proc. A. N. S. Philada., **lvii**.
Philadelphia—Island Road, Kingsessing (B. Sm.).
14. *CRATAEGUS FELIX* Sarg. Proc. A. N. S. Philada., **lvii**.
Berks—Dry, open, stony fields east of Reading (Gruber).
15. *CRATAEGUS VIRELLA* Ashe. Ann. Carnegie Mus., **I**, pt. 3, 396 (1902).
Berks—Common near Kutztown (Gruber).
16. *CRATAEGUS RUTHIANA* Sarg. Proc. A. N. S. Philada., **lvii**.
Bucks—Limestone bluffs, Durham (Fr.).
17. *CRATAEGUS COMATA* Sarg. Proc. A. N. S. Philada., **lvii**.
Philadelphia—Banks of the Schuylkill below Gray's Ferry (B. Sm.).
18. *CRATAEGUS JEJUNA* Sarg. Proc. A. N. S. Philada., **lvii**.
Bucks—Dry hillsides near Sellersville (Fr.).
19. *CRATAEGUS UPLANDIA* Sarg. Proc. A. N. S. Philada., **lvii**.
Delaware—Upper Darby near the State Road, Crum Creek, Newtown;
 Castle Rock (B. Sm.).

20. *CRATAEGUS CALLOSA* Sarg. Proc. A. N. S. Philada., lvii.
Berks—Border of woods on high, rocky ground N. Heidelberg Twp. (Gruber).
21. *CRATAEGUS CESTRICA* Sarg. Proc. A. N. S. Philada., lvii.
Delaware—Preston Run barrens, Newtown (B. Sm.).
22. *CRATAEGUS AUGUSTA* Sarg. Proc. A. N. S. Philada., lvii.
Berks—Borders of woods and open thickets near Kutztown (Gruber).
23. *CRATAEGUS INSUETA* Sarg. Proc. A. N. S. Philada., lvii.
Philadelphia—West Fairmount Park near lake (Mac.).
24. *CRATAEGUS DISSONA* Sarg. Rhodora, v, 60 (1903).
Bucks—Race-bank, Benjamin near Sellersville (Fr.).
25. *CRATAEGUS ALACRIS* Sarg. Proc. A. N. S. Philada., lvii.
Bucks—Deep Run, near Sellersville (Fr.).
26. *CRATAEGUS DEDUCTA* Sarg. Proc. A. N. S. Philada., lvii.
Bucks—Near Sellersville (Fr.).
27. *CRATAEGUS DELTOIDES* Ashe. Jour. Elisha Mitchell Sci. Soc., xix, pt. 2 (1901).
Bucks—Near Ridge Road, near Brucker's, Rock Hill, rare (Fr.).
28. *CRATAEGUS FRETZII* Sarg. Proc. A. N. S. Philada., lvii.
Bucks—In low, rich soil, Durham (Fr.).
29. *CRATAEGUS SCABRIUSCULA* Sarg. Proc. A. N. S. Philada., lvii.
Bucks—Durham (Fr.).
30. *CRATAEGUS DELICATA* Sarg. Proc. A. N. S. Philada., lvii.
Bucks—Hillsides near Sellersville (Fr.).
31. *CRATAEGUS DELAWARENSIS* Sarg. Bot. Gaz., xxxv, 102 (Feb., 1903).
New Castle—Wood borders between Newport and New Castle, rare (Canby).
32. *CRATAEGUS TENELLA* Ashe. Ann. Carnegie Mus., I, pt. 3, 388 (1902).
Bucks—Near Sellersville (Fr.). *Delaware*—Hill below Castle Rock Park, Valley of Darby Creek (B. Sm.). *Berks*—Banks of Sacony Creek near Kutztown (Gruber).
New Castle—(Canby).
33. *CRATAEGUS RUFIPES* Ashe. Jour. Elisha Mitchell Sci. Soc., 5 (1904).
Bucks—Near Sellersville (Fr.). *Berks*—Near Kutztown, North Heidelberg (Gruber).
34. *CRATAEGUS LATA* Sarg. Proc. A. N. S. Philada., lvii.
Bucks—Hillside near Sellersville (Fr.).
35. *CRATAEGUS COLLINSIANA* Sarg. Proc. A. N. S. Philada., lvii.
Bucks—Meadow at hilltop near Sellersville (Fr.).
36. *CRATAEGUS PUMILA* Sarg. Proc. A. N. S. Philada., lvii.
Bucks—Near Sellersville (Fr.).
37. *CRATAEGUS FIRMA* Sarg. Proc. A. N. S. Philada., lvii.
Bucks—Meadow near Pleasant Spring Bridge, hilltop near Sellersville (Fr.).
38. *CRATAEGUS GRUBERI* Ashe. Ann. Carnegie Mus., I, pt. 3, 388.
Berks—Fields, fence-rows and borders of woods, Kutztown, West Lockport (Gruber).

39. *CRATAEGUS AMPLA* Sarg. Proc. A. N. S. Philada., lvii.
Berks—Near Sacony Creek, Kutztown (Gruber).
40. *CRATAEGUS POPULNEA* Ashe. Ann. Carnegie Mus., I, pt. 3, 395 (1902).
Berks—Banks of Sacony Creek, near Kutztown (Gruber).
41. *CRATAEGUS CONDENSEA* Sarg. Proc. A. N. S. Philada., lvii.
Bucks—Meadows at Pleasant Spring Bridge, hilltop near Sellersville (Fr.).
42. *CRATAEGUS MOYERIANA* Sarg. Proc. A. N. S. Philada., lvii.
Bucks—Near Sellersville (Fr.).
43. *CRATAEGUS SATURATA* Sarg. Proc. A. N. S. Philada., lvii.
Bucks—Near Pleasant Spring Bridge, hilltop near Sellersville (Fr.).
44. *CRATAEGUS MINIATA* Ashe. Jour. Elisha Mitchell Sci. Soc., 5 (1904).
Berks—Banks of streams near Kutztown (Gruber).
45. *CRATAEGUS LONGIPETIOLATA* Sarg. Proc. A. N. S. Philada., lvii.
Bucks—Border of woods near Sellersville (Fr.).
46. *CRATAEGUS INSOLITA* Sarg. Proc. A. N. S. Philada., lvii.
Delaware—Collen Brook, U. Darby and Lownes' Run, Springfield (B. Sm.).
47. *CRATAEGUS STOLONIFERA* Sarg. Bot. Gaz., xxxv, 109 (Feb., 1903).
Bucks—Pleasant Spring Bridge, hilltop near Sellersville, South Perkasie (Fr.). Delaware—Preston Run barrens, Newtown and Lownes' Run, Springfield (B. Sm.).
New Castle—Between Newport and Stanton; Wilmington at Clayton Street and Delaware Avenue (Canby).
48. *CRATAEGUS MODICA* Sarg. Proc. A. N. S. Philada., lvii.
Bucks—Pleasant Spring Bridge and hilltop near Sellersville (Fr.).
49. *CRATAEGUS VITTATA* Ashe. Jour. Elisha Mitchell Sci. Soc., 4 (1904).
Berks—Borders of oak woods; near Robesonia, North Heidelberg (Gruber).
50. *CRATAEGUS SEQUAX* Ashe. Jour. Elisha Mitchell Sci. Soc., 4 (1904).
Berks—Low, moist soil on Sacony Creek near Kutztown (Gruber).
51. *CRATAEGUS TATNALLIANA* Sarg. Bot. Gaz., xxxv, 106 (Feb., 1903).
Philadelphia—Bartram's Garden (Mac.). Delaware—Preston Run barrens, Newtown (B. Sm.). Chester—Brandywine below Sager's Mill (Canby). Berks—(Gruber).
New Castle—Hedge rows and wood borders near Newport (Canby).
52. *CRATAEGUS DIGNA* Sarg. Proc. A. N. S. Philada., lvii.
Berks—Borders of meadows near Kutztown (Gruber).
53. *CRATAEGUS HOLMESIANA* Ashe. Jour. Elisha Mitchell Sci. Soc., xvi, pt. 2, 78 (1900).
Bucks—Banks of Perkiomen Creek, Sellersville (Fr.). Berks—Near Kutztown (Gruber).
54. *CRATAEGUS ACUTATA* Ashe. Ann. Carnegie Mus., i, pt. 3, 337 (1902).
Philadelphia—Island Road, Kingessing (B. Sm.). Bucks—Sellersville (Fr.). Delaware—Lownes' Run, Springfield (B. Sm.). Berks—Borders of streams and meadows (Gruber).

- New Castle*—Near Wilmington; near Newport and fields south of Eden Park (Canby).
55. *CRATAEGUS OCCINEA* L. M. p. 521.
Berks—Near Kutztown (Gruber). *Northampton*—Easton (Porter).
56. *CRATAEGUS DODGEI* Ashe. Jour. Elisha Mitchell Sci. Soc., 26 (March, 1903).
Bucks—Meadows at California (Fr.). *Berks*—Near Kutztown (Gruber).
57. *CRATAEGUS EVANSIANA* Sarg. Proc. A. N. S. Phila., lvii.
Philadelphia—West Fairmount Park near lake (Mac.).
58. *CRATAEGUS MODESTA* Sarg. Rhodora, III, Nos. 26, 28 (1901).
Berks—Near Kutztown (Gruber).
59. *CRATAEGUS ABJECTA* Sarg. Proc. A. N. S. Philada., lvii.
Bucks—Pleasant Spring Bridge, hilltop near Sellersville, near Perkasio (Fr.).
60. *CRATAEGUS CUPREA* Sarg. Bot. Gaz., xxxv, 105 (Feb., 1903).
New Castle—Vacant lots, Wilmington (Canby).
61. *CRATAEGUS BARTONIANA* Sarg. Proc. A. N. S. Philada., lvii.
Philadelphia—On the Schuylkill below Gray's Ferry, West Fairmount Park between Horticultural Hall and the river (B. Sm.).
62. *CRATAEGUS NEMORALIS* Sarg. Bot. Gaz., xxxv, 104 (Feb., 1903).
Bucks—Near Sellersville, Rock Hill, Durham (Fr.).
New Castle—Rockford Park, Wilmington (Canby).
63. *CRATAEGUS SAXATILIS* Sarg. Proc. A. N. S. Philada., lvii.
Delaware—Preston Run barrens, Newtown (B. Sm.).
64. *CRATAEGUS FOETIDA* Ashe. Ann. Carnegie Mus., i, pt. 3, 389 (1902).
Berks—Near Kutztown (Gruber).
65. *CRATAEGUS APPOSITA* Sarg. Bot. Gaz., xxxv, 103 (Feb., 1903).
Bucks—Rock Hill near Sellersville (Fr.). *Delaware*—Near Collen Brook, U. Darby (B. Sm.). *Berks*—West Leesport and near Kutztown (Gruber).
New Castle—Wilmington, Bancroft's Dam and Rockford Park, and Brandywine above Thompson's Bridge (Canby).
66. *CRATAEGUS RESES* Ashe. Jour. Elisha Mitchell Sci. Soc., 9 (1904).
Berks—Open oak woods, N. Heidelberg (Gruber).
67. *CRATAEGUS INDUCTA* Ashe. Jour. Elisha Mitchell Sci. Soc., xix, pt. 1, 24 (1903).
Delaware—Chad's Ford on Dan's Hill (B. Sm.). *Berks*—Open woods, West Leesport, North Heidelberg (Gruber).
68. *CRATAEGUS DEFINITA* Sarg. Proc. A. N. S. Philada., lvii.
Delaware—Preston Run barrens, Newtown, rare (B. Sm.).
69. *CRATAEGUS PAINTERIANA* Sarg. Proc. A. N. S. Philada., lvii.
Delaware—Preston Run barrens, Newtown, Lownes' Run, Springfield (B. Sm.).
70. *CRATAEGUS FULVA* Sarg. Proc. A. N. S. Philada., lvii.
Berks—Borders of woods above Forge Hill, North Heidelberg (Gruber).

71. CRATAEGUS PYGMAEA Sarg. Proc. A. N. S. Philada., lvii.
Bucks—Roadsides near Sellersville (Fr.).
72. CRATAEGUS INFERA Sarg. Proc. A. N. S. Philada., lvii.
Bucks—Roadsides near Sellersville (Fr.).
73. CRATAEGUS SCHWEINITZIANA Sarg. Proc. A. N. S. Philada., lvii.
Bucks—Roadsides near Sellersville (Fr.).
74. CRATAEGUS DARLINGTONIANA Sarg. Proc. A. N. S. Philada., lvii.
Chester—Serpentine Ridge north of West Chester (B. Sm.).
75. CRATAEGUS UNIFLORA Muench. M. p. 522.
Bucks—Near Sellersville (Fr.). Delaware—Lownes' Run, Springfield (B. Sm.). Berks—Near Kutztown (Gruber).
New Jersey—Frequent.
76. CRATAEGUS SMITHII Sarg. Trees and shrubs. Pt. ii, 67, t. 34 (1903).
Bucks—Near Sellersville (Fr.). Delaware—Open hillsides along Lownes' Run, Springfield, Dr. George Smith; near Media; Newtown and Marple line (B. Sm.).
77. CRATAEGUS TOMENTOSA L. M. p. 522.
Bucks—Near Sellersville, Durham (Fr.). Berks—Near Kutztown (Gruber). Northampton—Chestnut Hill, Easton (Porter).
78. CRATAEGUS STRUCTILIS Ashe. Jour. Elisha Mitchell Sci. Soc., xix, 12 (1903).
Bucks—Near Sellersville (Fr.). Berks—Banks of Secony Creek near Kutztown (Gruber).
79. CRATAEGUS SUCCULENTA Link. Man. Trees, 497.
Bucks—Near Sellersville (Fr.). Delaware—Along Crum Creek below Castle Rock (B. Sm.). Berks—Near Kutztown (Gruber).
80. CRATAEGUS RADIOSA Sarg. Proc. A. N. S. Philada., lvii.
Delaware—Darby Creek near the mouth of Collen Brook, U. Darby (B. Sm.).
81. CRATAEGUS MICRANTHA Sarg. Proc. A. N. S. Philada., lvii.
Bucks—Near Sellersville (Fr.). Berks—Rocky ridge near Kutztown (Gruber).
82. CRATAEGUS OPICA Ashe. Jour. Elisha Mitchell Sci. Soc., xix, 10 (1903).
Bucks—Durham, near Sellersville (Fr.). Berks—Secony Creek near Kutztown (Gruber).
83. CRATAEGUS CHADESFORDIANA Sarg. Proc. A. N. S. Philada., lvii.
Delaware—Wooded slopes below Chad's Ford (B. Sm.).
84. CRATAEGUS CORDATA Ait. Washington Thorn. M. p. 520. Introduced from the South for hedging and naturalized.
85. CRATAEGUS OXYACANTHA L. English Hawthorn. M. p. 520. Escaped from cultivation.

Family 13. DRUPACEAE DC. Plum. Family.

Drupe glabrous.
Drupe velvety.

1. *Prunus*.
2. *Amygdalus*.

1. PRUNUS L.

Flowers in lateral scaly umbels or fascicles, expanding with or before the leaves.

Inflorescence umbellate, the clusters sessile or nearly so.

Leaves convolute in vernation, fruit mostly large; pit more or less flattened.

Umbels several-flowered.

Leaves abruptly acuminate, drupe red or yellow.

1. *P. Americana*.

Leaves acute, gradually acuminate or obtusish, drupe red or purple.

Leaves glabrous when mature. 2. *P. angustifolia*.

Leaves pubescent, at least on the lower surface, when mature. 3. *P. maritima*.

4. *P. spinosa*.

Umbels only 1-2-flowered.

Leaves conduplicate in vernation; fruit mostly small; pit mostly globose.

Flowers 6-12 mm. broad; low shrubs.

Leaves oblanceolate or spatulate. 5. *P. pumila*.

Leaves oval, oblong, or slightly obovate.

6. *P. cuneata*.

Flowers 15-30 mm. broad; trees.

Leaves glabrous; pedicels short; fruit sour.

7. *P. Cerasus*.

Leaves pubescent beneath, at least on the veins; pedicels long; fruit sweet. 8. *P. Avium*.

Inflorescence more or less corymbose; leaves shining.

9. *P. Pennsylvanica*.

Flowers corymbose, terminating twigs of the season. 10. *P. Mahaleb*.

Flowers racemed, terminating branches of the season.

Fruit red to purple, astringent; leaves obovate or oval.

11. *P. Virginiana*.

Fruit purple or purplish-black, sweet or bitter. 12. *P. serotina*.

1. PRUNUS AMERICANA Marsh. *Wild Yellow or Red Plum*. M. p. 524. Borders of woodlands. Spring.

2. PRUNUS ANGUSTIFOLIA Michx. *Chickasaw Plum*. M. p. 524. Dry soil, escaped from cultivation. Early summer.

Delaware—Between Morton Station and Darby Creek Ferry, Bidley, Dr. Geo. Smith (Fu.).

Salem—Near Penn Grove (C.).

New Castle—Summit Bridge, Collins, Commons.

3. PRUNUS MARITIMA Wang. *Beach Plum*. M. p. 524. Sea-beaches and vicinity. Spring.

4. PRUNUS SPINOSA L. *Sloe, Black Thorn*. M. p. 525. Roadsides and waste places. Spring.

Philadelphia—Bartram's Garden (Je.). *Bucks*—Near Perkasie (Fr.).

Delaware—Burn Brae, near Clifton, Dr. Geo. Smith (Fu.), Lansdowne (Pe.).

Mercer—Trenton (C.). *Hunterdon*—Rossmont (C.).

5. PRUNUS PUMILA L. *Dwarf Cherry, Sand Cherry*. M. p. 525. Rocks and sandy banks. Spring.

Bucks—Point Pleasant (Fr.). *Lancaster*—Pleasant Grove (Ca.).

Northampton—Getter's Island near Easton, Porter (B. C.).

Hunterdon—Booles' Island (Br.).

6. PRUNUS CUNEATA Raf. M. p. 525. In wet soil or among rocks. Spring. *Chester*—(P.). *Lancaster*—New Texas (P.). *Northampton*—(P.).

7. PRUNUS CERASUS L. *Sour Cherry*. M. p. 525. Woods and thickets, escaped from cultivation.
8. PRUNUS AVIUM L. *Sweet Cherry*. M. p. 525. Woods and thickets, escaped from cultivation. Spring.
9. PRUNUS PENNSYLVANICA L. f. *Wild Red Cherry*. M. p. 526. Rocky woods. Spring.
Northampton—Wind Gap (He.).
10. PRUNUS MAHALEB L. *Mahaleb*. M. p. 526. Waste places and in cultivation. Spring.
Philadelphia—Bartram's Garden (Mac.). *Lancaster*—(P.). *Northampton*—(P.).
New Castle—Barley Mill, Tatnall; S. Park, Hancock street, E. K. Thompson. Escaped by seed, Jackson street.
11. PRUNUS VIRGINIANA L. *Choke Cherry*. M. p. 526. River banks and rocks. Spring.
12. PRUNUS SEROTINA Ehrh. *Wild Black Cherry*. M. p. 526. Woods and open places. Spring.

2. AMYGDALUS L.

1. AMYGDALUS PERSICA L. *Peach*. M. p. 526. Spontaneous all over the region.

Family 15. CAESALPINACEAE Kl. & Garcke. Senna Family.

Trees or shrubs; leaves simple; corolla irregular, apparently papilionaceous, but the lateral petals enclosing the upper. 1. *Cercis*.

Herbs; flowers perfect; leaves pinnate or bipinnate; corolla nearly regular. 2. *Cassia*.

Trees; leaves pinnate or bipinnate; flowers diœcious or polygamous.

Receptacle short; stamens 3-5; pod flat. 3. *Gleditsia*.

Receptacle elongated; stamens 10; pod oblong, woody. 4. *Gymnocladus*.

1. CERCIS L.

1. CERCIS CANADENSIS L. *Redbud, Judas-tree*. M. p. 529. Rich soil.
Early spring.

2. CASSIA L.

Leaflets linear to oblong, numerous, 6-20 mm. long; plants 1.5-6.5 dm. high.

Flowers 4-8 mm. broad, short-pedicelled, anthers 5. 1. *C. nictitans*.

Flowers 2.5-4 cm. broad, slender-pedicelled, anthers 10.

2. *C. Chamaecrista*.

Leaflets ovate, oblong or obovate, 2-5 cm. long; plants 3-15 dm. high.

Leaflets 6 or 4, broadly obovate.

3. *C. Tori*.

Leaflets 8-18, oblong or ovate-lanceolate.

Perennial; leaflets oblong, obtuse.

4. *C. Marylandica*.

Annual; leaflets ovate-lanceolate, acute or acuminate.

5. *C. occidentalis*.

1. CASSIA NICITANS L. *Wild Sensitive Plant*. M. p. 529. Sandy fields.
Summer.

2. CASSIA CHAMAECRISTA L. *Partridge Pea*. M. p. 529. Sandy fields.
Summer.

3. *CASSIA TORA* L. M. p. 529. Introduced. Summer.
Delaware—Banks of Darby Creek, Burmont (Mac.).
4. *CASSIA MARYLANDICA* L. *Wild Senna*. M. p. 530. Alluvial and sandy soil. Summer.
5. *CASSIA OCCIDENTALIS* L. M. p. 530. Introduced. Summer.
Delaware—Banks of Darby Creek, Burmont (Mac.).

3. GLEDITSIA L.

1. *GLEDITSIA TRIACANTHOS* L. *Honey Locust*. M. p. 531. In cultivation and escaped. Early summer.

4. GYMNOCLADUS Lam.

1. *GYMNOCLADUS DIOICA* (L.) Kech. *Kentucky Coffee-tree*. M. p. 531. In cultivation. Spring.

Family 17. PAPILIONACEAE L. Pea Family.

The 10 stamens distinct.

Leaves pinnate.

Leaves digitate or simple.

Tribe 1. *Sophoreae*.

Tribe 2. *Podalyrieae*.

The stamens monadelphous or diadelphous.

Herbs, shrubs, woody vines or trees, the leaves not tendrill-bearing.

Pod not a loment, 2-valved and indehiscent.

Foliage not glandular-dotted.

Stamens monadelphous; anthers of 2 kinds.

Tribe 3. *Genisteae*.

Stamens diadelphous, anthers all alike.

Leaves 3-foliolate, rarely 1-foliolate.

Leaflets denticulate.

Tribe 4. *Trifolieae*.

Leaflets entire.

Tribe 5. *Loteae*.

Leaves pinnately several-many-foliolate, rarely 1-foliolate.

Tribe 7. *Galegeae*.

Foliage glandular-dotted; pod indehiscent; 1-2-seeded herbs.

Tribe 6. *Psoraleae*.

Pod a loment; herbs.

Tribe 8. *Hedysareae*.

Herbaceous vines, or herbs; leaves evenly pinnate with tendrils.

Tribe 9. *Vicieae*.

Vines, ours herbaceous, or erect herbs; leaves odd-pinnate, mostly 3-foliolate, without tendrils.

Tribe 10. *Phaseoleae*.

Tribe 1. SOPHOREAE.

1. *Cladrastis*.

Tribe 2. PODALYRIEAE.

2. *Baptisia*.

Tribe 3. GENISTEAE.

Herbs, with simple or 5-11-foliolate leaves.

Leaves simple, pod inflated.

Leaves 5-11-foliolate; pod flattened.

Shrubs, with 1-3-foliolate leaves.

3. *Crotalaria*.

4. *Lupinus*.

5. *Cytisus*.

Tribe 4. TRIFOLIEAE.

Flowers spiked or capitate; pods curved or coiled.

Flowers in long racemes; pods coriaceous.

Flowers capitate or umbelled; pods straight, membranous.

6. *Medicago*.

7. *Melilotus*.

8. *Trifolium*.

Tribe 5. LOTEAE.

9. *Lotus*.

Tribe 6. PSORALEAE.

10. *Amorpha*.

Tribe 7. GALEGEAE.

Herbs; leaves odd-pinnate.
High-climbing, woody vines.
Trees or shrubs.
Herbs; leaves evenly pinnate.

11. *Cracca*.
12. *Bradleya*.
13. *Robinia*.
14. *Sesban*.

Tribe 8. HEDYSAREAE.

Leaves odd-pinnate.
Flowers purplish, umbellate.
Flowers yellow, small.
Leaves 3-foliate, the terminal leaflet stalked.
Flowers yellow.
Flowers purple, blue or white.
Pod of several joints; leaflets stipellate.
Pod of 1 or 2 joints; leaflets not stipellate.

15. *Coronilla*.
16. *Aeschynomene*.
17. *Stylosanthes*.
18. *Meibomia*.
19. *Lepedeza*.

Tribe 9. VICIEAE.

Style slender, with a tuft of hairs at the summit.
Style flattened, bearded along the inner side.

20. *Vicia*.
21. *Lathyrus*.

Tribe 10. PHASEOLEAE.

Style bearded along the inner side; rachis not thickened at the insertion of the flowers; keel of corolla not curved nor coiled.
Style glabrous, or slightly pubescent below; keel of corolla not curved nor coiled.
Standard spurred at the base.
Standard not spurred.
Leaves odd-pinnate; leaflets 5-7.
Leaves 3-foliate, rarely 1-foliate.
Calyx tubular, not bracteolate.
Calyx short, bracteolate.
Style bearded along the inner side; rachis thickened at the insertion of the flowers.
Keel of the corolla spirally coiled; flowers racemed.
Keel strongly incurved; flowers purple, capitate.

23. *Clitorea*.
22. *Bradburya*.
25. *Apios*.
24. *Falcata*.
26. *Galactia*.
27. *Phaseolus*.
28. *Strophostyles*.

1. CLADRASTIS Raf.

1. CLADRASTIS LUTEA (Michx.) Koch. Yellow-wood. M. p. 534. Cultivated. Spring.

2. BAPTISIA Vent.

1. BAPTISIA TINCTORIA (L.) R. Br. Wild Indigo. M. p. 534. Sandy, dry soil. Summer.

3. CROTALARIA L.

1. CROTALARIA SAGITTALIS L. Rattlebox. M. p. 536. Sandy soil. Summer.

4. LUPINUS L.

1. LUPINUS PERENNIS L. Lupine. M. p. 536. Sandy soil. Summer.
Bucks—Penn Valley (Cr.), Nockamixon (Fr.), Buckingham (Ws.).
Montgomery—Shannonville (Cr.). Delaware—H. Lewis' Woods, Upper Providence (Fu.), Springfield (S. Tr.) (W. Tr.). Chester—Above Valley Forge (Mac.). Lancaster—(P.). Lehigh—Heidelberg (Kr.). Berks—(P.). Northampton—Easton, Porter (B. C.).

New Jersey—Common.

New Castle—Col. Andrew's. Rare.

5. CYTISUS L.

1. *CYTISUS SCOPARIUS* (L.) Link. *Scotch Broom*. M. p. 537. Waste places and in cultivation. Summer.

Philadelphia—Railroad bank, Paschallville (Ha.). *Bucks*—(P.). *Delaware*—Glenolden, Dr. J. B. Brinton (He.), above Tinicum (Gi.), near Chester (Pr.) (W. Tr.). *Lancaster*—Cut at Gap (Cr.).

Camden—Cedar Brook (Ke.). *Gloucester*—Woodbury (Cr.) (He.) Tomlin (Ja.).

New Castle—Summit Bridge, *Murgatroid*, and along the Canal, *Commons*.

6. MEDICAGO L. MEDIC.

Perennial; flowers violet, conspicuous.

1. *M. sativa*.

Annual; flowers bright yellow, small.

Pod 1-seeded, curved, not spiny.

2. *M. lupulina*.

Pod several-seeded, spiny on the edges, spirally twisted.

Pod loosely coiled, not furrowed on the edge.

3. *M. denticulata*.

Pod densely coiled, its edge furrowed.

4. *M. Arabica*.

1. *MEDICAGO SATIVA* L. *Lucerne, Alfalfa*. M. p. 538. Cultivated for fodder and escaped. Summer.

2. *MEDICAGO LUPULINA* L. *Black Medic, Nonesuch*. M. p. 538. Fields and waste places. Spring to winter.

3. *MEDICAGO DENTICULATA* Willd. M. p. 538. Ballast. Summer.

Philadelphia—Philadelphia Navy Yard, I. Burk (Fu.), Mayland's Garden (Te.). *Bucks*—(P.).

Camden—Kaighn's Point, C. A. Boies (B. C.) (Ja.). *Mercer*—Trenton (C.).

4. *MEDICAGO ARABICA* All. M. p. 538. Waste places and ballast. Summer.

Philadelphia—Wissahickon (Te.). *Bucks*—Andalusia, Mart. (B. C.). *Delaware*—(P.).

Camden—Kaighn's Point.

New Castle—Field near 17th and Tatnall streets.

MEDICAGO MINIMA L. Ballast.

Philadelphia—Greenwich Point (Te.).

Camden—Camden, I. Burk (He.).

7. MELILOTUS Juss. MELILOT. SWEET CLOVER.

Flowers white.

1. *M. alba*.

Flowers yellow.

2. *M. officinalis*.

1. *MELILOTUS ALBA* Desv. M. p. 539. Waste grounds. Summer.

2. *MELILOTUS OFFICINALIS* (L.) Lam. M. p. 539. Waste grounds. Summer.

MELILOTUS PARVIFLORA Desf. Ballast. Summer.

Philadelphia—Old Navy Yard, I. Burk (He.).

Camden—Kaighn's Point (Ja.).

ONONIS REPENS L. M. p. 539. Ballast. Summer.

Camden—Kaighn's Point (He.) (Ja.).

8. TRIFOLIUM L. CLOVER.

Flowers yellow.

Head 12-18 mm. long; stipules linear; leaflets all sessile.

1. *T. aureum*.

Head 8-12 mm. long, nearly globose; stipules ovate; terminal leaflet stalked.

Head 20-40-flowered; standard conspicuously striate.

2. *T. procumbens*.

Head 3-20-flowered; standard scarcely striate.

3. *T. dubium*.

Flowers red, purple, pink or white.

Head or spike much longer than thick; calyx silky, its teeth plumose.

Corolla crimson, equalling or exceeding the calyx-teeth.

4. *T. incarnatum*.

5. *T. arvense*.

Head globose, oval, or ovoid; calyx nearly glabrous.

Flowers sessile, or very nearly so; heads dense, ovoid, oval, or globose.

6. *T. pratense*.

Flowers pedicelled; heads umbel-like, globose.

Heads 2.5 cm. in diameter or more; peduncles 2-8 cm. long.

7. *T. reflexum*.

Heads 12-18 mm. in diameter; lower peduncles 5-20 cm. long.

Ascending or procumbent; flowers pink, pinkish or purple.

Ascending; calyx much shorter than the pink or nearly white corolla.

8. *T. hybridum*.

Procumbent; tufted; calyx nearly equalling the purple corolla.

9. *T. Carolinianum*.

Creeping; flowers white or pinkish.

10. *T. repens*.

1. TRIFOLIUM AUREUM Poll. Yellow or Hop Clover. M. p. 539. Sandy fields and roadsides. Summer.
2. TRIFOLIUM PROCUMBENS L. M. p. 540. Sandy fields and roadsides. Summer.
3. TRIFOLIUM DUBIUM Sibth. M. p. 540. Fields and waste places. Summer.
Philadelphia—Chestnut Hill (VP.). Bucks—Penn Valley (Cr.), Tallytown (Le.). Delaware—Tinicum (Fu.).
Gloucester—Mickleton (He.), Timber Creek (Te.). Cape May—Peermont (Br.), Tuckahoe (Ja.), Wildwood (Wn.). Atlantic—Hammonton, May's Landing (C.). Ocean—Forked River (Mac.). Hunterdon—White Hill (C.). Mercer—Crosswick's Creek (Br.).
New Castle—Frequent.
4. TRIFOLIUM INCARNATUM L. Crimson or Italian Clover. M. p. 540. Cultivated and persisting. Summer.
5. TRIFOLIUM ARVENSE L. Rabbit-foot or Stone Clover. M. p. 540. Old fields. Summer.
6. TRIFOLIUM PRATENSE L. Red Clover. M. p. 540. Fields and meadows. Summer.
7. TRIFOLIUM REFLEUM L. Buffalo Clover. M. p. 541. Meadows. Summer.
Montgomery—Norristown (Me.). Chester—Phoenixville, I. Burk (He.). Mercer—Trenton (C.).
8. TRIFOLIUM HYBRIDUM L. Alsike Clover. M. p. 541. Meadows and waste places. Spring to fall.
9. TRIFOLIUM CAROLINIANUM Michx. M. p. 541. Waste ground. Spring to fall.
Philadelphia—Navy Yard, Mart. (B. C.).

10. *TRIFOLIUM REPENS* L. *White Clover*. M. p. 541. Fields and waste places. Spring to winter.

TRIFOLIUM SUBTERRANEUM L. Ballast.

Camden—Camden, C. A. Boice (B. C.).

9. *LOTUS* L.

1. *LOTUS CORNICULATUS* L. *Bird's-foot Trefoil*. M. p. 542. Ballast. Summer.

Philadelphia—West Park (VP.).

Camden—Kaighn's Point.

New Castle—Yard of Chicago Wire Works.

10. *AMORPHA* L.

1. *AMORPHA FRUTICOSA* L. *False Indigo*. M. p. 545. Escaped from cultivation. Early summer.

11. *CRACCA* L.

1. *CRACCA VIRGINIANA* L. *Goat's Rue, Catgut*. M. p. 548. Dry, sandy soil. Early summer.

12. *BRADLEYA* Adans.

1. *BRADLEYA FRUTESCENS* (L.) Greene. *American Wistaria*. M. p. 549. Cultivated. Spring.

13. *ROBINIA* L. LOCUST.

Twigs, petioles and pods glabrous; flowers white; a tree. 1. *R. Pseudacacia*.
Twigs and petioles glandular; pods hispid; flowers pinkish; a tree.

2. *R. viscosa*.

Twigs and petioles bristly; pods hispid; flowers pink or purple; a shrub.

3. *R. hispida*.

1. *ROBINIA PSEUDACACIA* L. *Common Locust, False Acacia*. M. p. 549. Extensively naturalized. Spring.

2. *ROBINIA VISCOSA* Vent. *Clammy Locust*. M. p. 549. Cultivated and escaped. Early summer.

3. *ROBINIA HISPIDA* L. *Rose Acacia*. M. p. 549. Cultivated and escaped from cultivation. Spring.

14. *SESBAN* Adans.

1. *SESBAN MACROCARPA* Muhl. M. p. 550. In wet or moist soil. Introduced. Summer.

Delaware—Near Lansdowne (Mac.).

15. *CORONILLA* L.

1. *CORONILLA VARIA* L. *Azwort*. M. p. 557. Roadsides and waste places. Summer.

Philadelphia—Philadelphia Salt Works, I. Burk (He.). Chester—Streets of West Chester (P.).

Camden—Kaighn's Point (Ja.) (Wn.). Ocean—Waretown (Sta.).

Hunterdon—Lambertville (C.). Somerset—Somerville (C.).

16. AESCHYNOMENE L.

1. AESCHYNOMENE VIRGINICA (L.) B. S. P. *Sensitive Joint Vetch*. M. p. 558. Along rivers. Summer.

Delaware—Tinicum, Dr. Geo. Smith (Fu.).

Camden — Kaighn's Point (C.). Gloucester — Center Square (Cr.), Bridgeport (Fu.), Oldman Creek near the Delaware, near Mickleton (He.), near Swedesboro (Li.). Salem—Banks of Delaware (C.).

New Castle—Brandywine Creek near Shelpot; river shore at and below Delaware City (Ta.), near Claymont (S. Tr.).

17. STYLOSANTHES Sw.

1. STYLOSANTHES BIFLORA (L.) B. S. P. *Pencil-flower*. M. p. 558. Dry soil. Summer.

18. MEIBOMIA Heist. TICK-TREFOIL.

Loment not constricted above, deeply constricted below, long-stalked; leaflets broad.

Panicle arising from the base of the plant; peduncle usually leafless.

1. *M. nudiflora*.

Panicle terminal; leaves crowded at the base.

2. *M. grandiflora*.

Loment constricted on both margins, more deeply below than above.

Stems trailing or reclining.

Leaflets orbicular or nearly so.

3. *M. Michauxii*.

Leaflets ovate or oval.

4. *M. glabella*.

Stems erect or ascending.

Leaves sessile or nearly so; leaflets linear or lanceolate.

5. *M. sessilifolia*.

Leaves petioled.

Leaflets narrowly linear; joints of the loment usually concave on the back.

6. *M. stricta*.

Leaflets broad.

Joints of the loment notably longer than broad.

Leaflets obtuse, rough-pubescent, yellowish-green.

7. *M. canescens*.

Leaflets long-acuminate, glabrous, glaucous beneath.

8. *M. bracteosa*.

Joints of the loment little longer than broad.

Loment distinctly long-stalked in the calyx.

Plants glabrous or nearly so.

Leaflets lanceolate or oblong.

9. *M. paniculata*.

Leaflets broadly ovate or oval, glaucous beneath.

10. *M. laevigata*.

Plants pubescent or scabrous.

Leaflets thick, coriaceous, velvety-pubescent beneath.

11. *M. viridiflora*.

Leaflets scarcely coriaceous, appressed-pubescent or villous beneath.

12. *M. Dillenii*.

Loment sessile in the calyx or nearly so.

Loment-joints 4-7; flowers numerous, showy.

13. *M. Canadensis*.

Leaflets scabrous, 2-5 cm. long.

14. *M. rigida*.

Leaflets not scabrous, 1-2 cm. long.

Plant nearly glabrous throughout.

15. *M. Marylandica*.

Stem pubescent; leaflets and petioles ciliate.

16. *M. obtusa*.

1. *MEIBOMIA NUDIFLORA* (L.) Kuntze. M. p. 560. Dry woods. Summer.
2. *MEIBOMIA GRANDIFLORA* (Walt.) Kuntze. M. p. 560. Dry or rocky woods. Summer.
3. *MEIBOMIA MICHAUXII* Vail. M. p. 560. Dry woods. Summer.
4. *MEIBOMIA GLABELLA* (Michx.) Kuntze. M. p. 560. Dry, sandy soil. Summer.
Philadelphia—Cresheim Creek near Wissahickon (Je.). *Bucks*—Durham, Ruth (Fr.). *Chester*—W. Bradford (St.).
Hunterdon—Beagle Corner (C.).
New Castle—Deakynes, Commons; Yorklyn, Canby.
5. *MEIBOMIA SESSILIFOLIA* (Torr.) Kuntze. M. p. 560. Dry soil. Summer.
Lancaster—McCall's Ferry, Porter (B. C.), York Furnace (Cr.).
6. *MEIBOMIA STRICTA* (Pursh.) Kuntze. M. p. 561. Pine-barrens. Summer.
Burlington—Quaker Bridge (Fr.). *Gloucester*—Malaga, Woodbury (C.).
7. *MEIBOMIA CANESCENS* (L.) Kuntze. M. p. 561. Moist grounds. Summer.
8. *MEIBOMIA BRACTEOSA* (Michx.) Kuntze. M. p. 561. Thickets. Late summer.
Bucks—Rock Hill (Fr.). *Montgomery*—Sumneytown, Lafayette (VP.).
Delaware—Glen Mills, Dr. Geo. Martin (Fu.), Lownes' Run, Springfield, L. L. Smith (B. Sm.), Concord (W. Tr.). *Chester*—Hibbert's Mill (Pr.), Pocopsin, Chester Valley opposite Paoli (St.). *Lancaster*—(P.). *Northampton*—Easton, Porter (B. C.). *Dauphin*—(P.).
Gloucester—Mickleton (C.), Swedesboro (Li.). *Hunterdon*—Rosemont (C.).
New Castle—Frequent.
9. *MEIBOMIA PANICULATA* (L.) Kuntze. M. p. 561. Copses. Summer.
10. *MEIBOMIA LAEVIGATA* (Nutt.) Kuntze. M. p. 561. Dry woods. Late summer.
Philadelphia—Wissahickon (VP.). *Montgomery*—Lafayette, Frazier's Bog (VP.). *Delaware*—Tinicum, Dr. Joseph Leidy, C. E. and A. H. Smith (Fu.) (B. Sm.). *Northampton*—Easton, Porter (B. C.).
Burlington—Crosswick's Creek (C.), Medford (St.). *Gloucester*—Near Mickleton (He.), Swedesboro (Li.). *Atlantic*—Ventnor (Gi.). *Mercer*—Princeton Junction (C.).
New Castle—Auburn, Tatnall; Townsend, Milltown, Canby.
11. *MEIBOMIA VIRIDIFLORA* (L.) Kuntze. M. p. 562. Dry woods. Autumn.
Philadelphia—Wissahickon (VP.). *Bucks*—(P.). *Delaware*—Glen Mills (Fu.), Williamson (Ke.), near Darby, C. E. Smith (B. Sm.), Concord (W. Tr.). *Chester*—(P.). *Lancaster*—(P.). *Northampton*—Easton, Porter (B. C.).
Burlington—Vincentown (C.), Medford (St.). *Camden*—Spring Garden, Tomlinson (C.). *Gloucester*—Swedesboro (Li.). *Hunterdon*—Rosemont, Baptisttown (C.), Clinton (Te.).
New Castle—Frequent.

12. *MEIBOMIA DILLENII* (Darl.) Kuntze. M. p. 562. Open woodlands. Summer.
13. *MEIBOMIA CANADENSIS* (L.) Kuntze. M. p. 562. Thickets and river-banks. Summer.
14. *MEIBOMIA RIGIDA* (Ell.) Kuntze. M. p. 562. Dry hillsides. Summer.
Philadelphia—Chestnut Hill (VP.). *Bucks*—Near Sellersville (Fr.).
Delaware—Williamson (Pe.), Tinicum (St.). *Chester*—W. Bradford,
Valley Forge (St.). *Lancaster*—(P.). *Northampton*—Easton, Porter
(B. C.).
New Jersey—Common.
New Castle—Wilmington (Wn.).
15. *MEIBOMIA MARYLANDICA* (L.) Kuntze. M. p. 562. Copses. Summer.
16. *MEIBOMIA OBTUSA* (Muhl.) Vail. M. p. 562. Dry soil. Summer.

19. *LESPEDEZA* Michx. BUSH-CLOVER.

Perennials; stipules and bracts subulate; calyx-lobes narrow.

Both petaliferous and apetalous flowers present; corolla purple or purplish; pod exserted.

Peduncles slender, and mostly exceeding the leaves.

Petaliferous flowers capitate or spicate.

Plants trailing or diffusely-procumbent.

Glabrous or appressed-pubescent. 1. *L. repens*.

Woolly or downy-pubescent. 2. *L. procumbens*.

Plants erect, rather stout, pubescent. 3. *L. Nuttallii*.

Petaliferous flowers loosely paniculate; stem erect or ascending. 4. *L. violacea*.

Flower-clusters of both kinds sessile or nearly so.

Leaflets oval, oblong, or orbicular.

Foliage densely downy-pubescent. 5. *L. Stuevei*.

Foliage glabrate or appressed-pubescent.

Leaflets linear or linear-oblong.

6. *L. frutescens*.

7. *L. Virginica*.

Flowers all complete; corolla whitish or yellowish; pod included or scarcely exserted.

Leaves oblong, ovate-oblong, or nearly orbicular.

Peduncles exceeding the leaves.

8. *L. hirta*.

Peduncles shorter than the leaves.

9. *L. capitata*.

Leaves linear or linear-oblong; peduncles elongated.

10. *L. angustifolia*.

11. *L. striata*.

Annual; stipules ovate; calyx-lobes broad.

1. *LESPEDEZA REPENS* (L.) Bart. M. p. 563. Dry or sandy soil. Late summer.

2. *LESPEDEZA PROCUMBENS* Michx. M. p. 563. Dry soil. Summer.

3. *LESPEDEZA NUTTALLII* Darl. M. p. 563. Dry soil. Late summer.

Bucks—Narrowsville (Br.) (Fr.). *Montgomery*—(P.). *Delaware*—
Newtown Square, Elwyn (St.). *Chester*—(P.). *Lancaster*—(P.).
Northampton—(P.).

4. *LESPEDEZA VIOLACEA* (L.) Pers. M. p. 563. Dry copses. Late summer.

5. *LESPEDEZA STUVEI* Nutt. M. p. 564. Dry soil. Late summer.

- 5a. *LESPEDEZA STUVEI NEGLECTA* Britton. M. p. 564. Dry soil. Late summer.

Philadelphia—(P.).

Cape May—Cape May Court-house (St.).

6. *LESPEDEZA FRUTESCENS* (L.) Britton. M. p. 564. Dry soil. Late summer.
7. *LESPEDEZA VIRGINICA* (L.) Britton. M. p. 564. Dry soil. Late summer.
Bucks—Bristol, Sellersville (Fr.). *Montgomery*—Ivy Rock (St.).
Delaware—Elwyn (St.). *Northampton*—Easton, Porter (B. C.).
New Jersey—Frequent.
8. *LESPEDEZA HIRTA* (L.) Ell. M. p. 564. Dry soil. Autumn.
9. *LESPEDEZA CAPITATA* Michx. M. p. 564. Dry and sandy soil. Late summer.
New Jersey—General.
10. *LESPEDEZA ANGUSTIFOLIA* (Pursh.) Ell. M. p. 564. Dry, sandy soil. Late summer.
Bucks—Penn Valley (Cr.). *Delaware*—(P.).
Camden—Winslow Junction (Cr.). *Gloucester*—Woodbury (Gi.), near Mickleton (He.). *Cumberland*—Vineland (Ab.). *Atlantic*—Egg Harbor, May's Landing (Li.).
New Castle—Collins' Beach, Commons.
11. *LESPEDEZA STRIATA* (Thunb.) H. & A. M. p. 564. Fields. Summer.
Delaware—Darby Creek (Ja.). (VP.). *Lancaster*—Pleasant Grove (Ca.).
Cape May—Wildwood (Ja.).

20. *VICIA* L. VETCH. TARE.

Flowers racemed or spicate; peduncles elongated.

Indigenous perennials.

Spike-like racemes dense, 1-sided, 15-40-flowered.

Racemes loose, 1-20-flowered.

Flowers 1.5-2 cm. long.

Flowers 4-10 mm. long.

Introduced annuals; flowers 4-6 mm. long.

Pod glabrous, 3-6-seeded.

Pod pubescent, 2-seeded.

Flowers sessile or very nearly so, few, axillary.

Leaflets oblong, oval, or obovate.

Leaflets, except those of lower leaves, linear or linear-oblong.

1. *V. Cracca*.

2. *V. Americana*.

3. *V. Caroliniana*.

4. *V. tetrasperma*.

5. *V. hirsuta*.

6. *V. sativa*.

7. *V. angustifolia*.

1. *VICIA CRACCA* L. M. p. 565. Dry soil. Summer.

Philadelphia—Greenwich Point (Te.). *Bucks*—Lahaska, New Hope, Wrightstown, cemeteries (Ws.). *Montgomery*—Tylersport (Fr.), Walnut Hill (Ja.), Horsham (Sa.), Spring House (VP.). *Delaware*—(P.).
Chester—West Chester, streets (Pr.). *Lancaster*—(P.). *Northampton*—(P.).

Camden—Kaighn's Point (He.) (Wn.). *Mercer*—Mt. Rose (C.).

Hunterdon—Lambertville, Kingwood, Rosemont, Sergeantsville, Fairmount, Flemington (C.).

2. *VICIA AMERICANA* Muhl. M. p. 565. Moist soil. Summer.

Bucks—Point Pleasant (Fr.). *Chester*—Phoenixville, Mart. (B. C.).

Lancaster—(P.). *Northampton*—Easton (Ca.).

Mercer—Trenton, Bordentown (C.). *Hunterdon*—Kingwood (C.).

3. *VICIA CAROLINIANA* Walt. M. p. 566. River banks. Early summer.

Philadelphia—Girard Point (Ke.). *Bucks*—Point Pleasant, Moyer

- (P.). Lancaster—(P.). Lehigh—Salisbury (Kr.). Northampton—(P.).
 Hunterdon—Somerset Junction (C.), Holland (Ca.).
4. *VICIA TETRASPERMA* (L.) Moench. M. p. 566. Meadows and waste places. Summer.
 Philadelphia—Fairmount Park (Te.). Delaware—Lazaretto Road (Mar.), Ridley, near Moores's Station, Tinicum (B. Sm.). Chester—Westtown (Cr.) (Ha.) (Le.).
 Burlington—Florence (C.). Camden—Ballast (C.), Ancora (Li.). Salem—Auburn (He.). Monmouth—Keyport (C.). Mercer—Lawrenceville, Trenton (C.). Hunterdon—Lambertville (C.).
 New Castle—Col. Davis.
5. *VICIA HIRSUTA* (L.) Koch. M. p. 566. Fields and waste places. Summer.
 Philadelphia—Navy Yard, Mart. (B. C.), Fairmount Park (Pr.) (Te.), Greenwich Point (Te.). Chester—(P.).
 Burlington—Beverly (Mac.). Camden—Kaighn's Point (Wn.). Gloucester—Parkville (C.), near Mickleton (He.). Mercer—Trenton (C.).
 New Castle—Near Wilmington, Dr. Michener.
6. *VICIA SATIVA* L. Common Vetch or Tare. M. p. 566. Fields and waste places. Summer.
7. *VICIA ANGUSTIFOLIA* Roth. M. p. 566. Ballast. Summer.
 Philadelphia—Waste places (P.).
 Camden—Kaighn's Point (Ja.).
- VICIA VILLOSA* Roth. M. p. 565.
 Bucks—Penn Valley (Fr.).

21. *LATHYRUS* L. VETCHLING. EVERLASTING PEA.

- Stipules foliaceous; plant of the seashore. 1. *L. maritimus*.
 Stipules half-sagitate, or small, or wanting, inland plants.
 Plants climbing or trailing; stipules present, pod sessile.
 Leaflets ovate or oval, large; flowers 10-20. 2. *L. venosus*.
 Leaflets linear, oblong or oval, smaller; flowers 2-6.
 Leaflets linear or linear-oblong; stem winged.
 Leaflets oblong or oval; stem wingless. 3. *L. palustris*.
 4. *L. myrtifolius*.
1. *LATHYRUS MARITIMUS* (L.) Bigel. Beach Pea. M. p. 567. Seashore. Summer.
 Ocean—Sea-Side Park (Ke.), Toms River (W. Tr.). Monmouth—Ocean Beach, Seabright, Sandy Hook (C.).
2. *LATHYRUS VENOSUS* Muhl. M. p. 567. Sandy banks. Summer.
 Bucks—Near New Hope (Ws.). Lancaster—York Furnace (Cr.) (Li.), McCall's Ferry (Li.). Lehigh—Laury's (Kr.). Northampton—Bethlehem (P.).
 Hunterdon—Milford (C.).
3. *LATHYRUS PALUSTRIS* L. M. p. 567. Moist places. Summer.
 Philadelphia—Byberry, Mart. (B. C.). Bucks—Bristol, Mart. (Fr.), Neeley's Mills (Ws.). Delaware—Darby, H. C. Barker (B. C.).
 Camden—Banks of the Delaware (C.), Merchantville (Ha.), Gloucester (Mac.). Gloucester—Swedesboro (Li.). Mercer—Trenton (C.).

4. *LATHYRUS MYETIFOLIUS* Muhl. M. p. 567. Moist places. Early summer.
Philadelphia—Byberry, Mart. (B. C.). *Bucks*—Bristol, Mart. (Fr.).
Delaware—Sandy bank near Media, Dr. Geo. Smith (Fu.) (B. Sm.). *Lancaster*—(P.). *Berks*—(P.). *Northampton*—(P.).
Camden—Cooper's Creek (C.). *Gloucester*—Mantua Creek (Wn.).
Mercer—Trenton (C.). *Hunterdon*—Milford (C.).

LATHYRUS APHACA L. Ballast.

Philadelphia—Greenwich Point (Te.).

LATHYRUS ERVUM L. Ballast.

Camden—Camden, C. T. Parker (B. C.).

LATHYRUS LATIFOLIUS L. Common in cultivation. Summer.

Philadelphia—Bartram's Garden, Mart. (B. C.).

New Castle—Shallcross Avenue and Franklin Street.

LATHYRUS TUBEROSUS L. Ballast.

Camden—Kaighn's Point (Ja.).

22. BRADBURYA Raf.

1. *BRADBURYA VIRGINIANA* (L.) Kuntze. *Spurred Butterfly-pea*. M. p. 568.
 Dry, sandy soil. Summer.
Cape May—Anglesea.

23. CLITORIA L.

1. *CLITORIA MARIANA* L. *Butterfly-pea*. M. p. 569. Dry soil. Early summer.
Philadelphia—On the Wissahickon (P.). *Lancaster*—(P.).
Atlantic—Hammonton (Cr.) (Ke.). *Ocean*—Toms River (C.).
New Castle—Rocky Ridge, Tatnall; Allapokas, east of Rockford, Milltown, Commons; Townsend, Canby.

24. FALCATA Gmel.

- Leaves thin; bracts small; plant pubescent or glabrate. 1. *F. comosa*.
 Leaves firm; bracts large; plant villous brown-pubescent. 2. *F. Pitcheri*.
 1. *FALCATA COMOSA* (L.) Kuntze. *Hog Pea-nut*. M. p. 569. Rich, damp woods. Summer.
 2. *FALCATA PITCHERI* (T. & G.) Kuntze. M. p. 569. Moist thickets. Summer.
Delaware—Haverford along Cobb's Creek (B. Sm.).

25. APIOS Moench.

1. *APIOS APIOS* (L.) MacM. *Ground-nut, Wild Bean*. M. p. 569. Low grounds. Summer.

26. GALACTIA P. Br. MILK PEA.

- Pods sparingly pubescent; plants glabrous or nearly so. 1. *G. regularis*.
 Pods copiously pubescent; plant closely pubescent. 2. *G. volubilis*.
 1. *GALACTIA REGULARIS* (L.) B. S. P. M. p. 570. Dry, sandy soil. Summer.
Philadelphia—Byberry, Mart. (B. C.). *Lancaster*—Lancaster (Ca.), Cedar Hill (P.). *Berks*—Near Reading (P.).

New Jersey—Common throughout the pine-barrens.

New Castle—Not rare.

2. *GALACTIA VULUBILIS* (L.) Britton. M. p. 570. Dry soil. Summer.
Berks—Near Reading (P.).

27. *PHASEOLUS* L.

1. *PHASEOLUS POLYSTACHYUS* (L.) B. S. P. *Wild Bean, Kidney Bean*. M. p. 571. Thickets. Summer.
Pennsylvania—Common.
Gloucester—Mullica Hill (He.), Swedesboro (Li.). *Cape May*—Wildwood (Br.). *Monmouth*—Asbury Park (Cr.), Loch Arbor, locality destroyed (Wn.). *Hunterdon*—Milford, Byram (C.).
New Castle—Frequent.

28. *STROPHOSTYLES* Ell. WILD BEAN.

Leaflets mainly lobed, 2-5 cm. long; pod 5-8 cm. long. 1. *S. helvola*.
Leaflets mainly entire, 1-4 cm. long; pod 2-5 cm. long. 2. *S. umbellata*.

1. *STROPHOSTYLES HELVOLA* (L.) Britton. M. p. 571. Sandy soil. Summer and fall.

Philadelphia—George's Hill (Ke.), Fairmount Park (Wn.). *Bucks*—Andalusia, Mart. (B. C.), Bristol (Fr.), Penn Valley (Wn.). *Delaware*—Tinicum, Dr. Geo. Smith (Fu.), Swarthmore (Pr.) (Ws.). *Chester*—(P.). *Northampton*—Bethlehem (P.).

New Jersey—Common.

New Castle—Frequent.

2. *STROPHOSTYLES UMBELLATA* (Muhl.) Britton. M. p. 571. Sandy soil. Summer.

Philadelphia—Wissahickon (Ke.), West Fairmount Park (Mac.), railroad above Manayunk (VP.). *Bucks*—Bristol, Mart. (Fr.), Langhorne (Ws.), Tullytown (Fr.), Penn Valley (Wn.). *Delaware*—Middletown, common (Fu.), Lansdowne (Gi.). *Chester*—(P.). *Lancaster*—(P.).

New Jersey—Common.

New Castle—Not common.

VIGNA REPENS (L.) Baker. Escaped from cultivation. Summer.

Philadelphia—Philadelphia Navy Yard, Mart. (B. C.).

HIPPOCREPIS COMOSA L. Ballast. Summer.

Philadelphia—Philadelphia, C. T. Parker (B. C.).

ANTHYLLIS VULNERARIA L. Ballast. Summer.

Camden—Kaighn's Point (Wn.).

Order 15. *GERANIALES*.

Stamens more than 1; land plants.

Flowers regular or nearly so; petals present, usually as many as the sepals.

Herbs, the leaves not punctate; flowers perfect.

Leaves not pinnately compound.

Capsule at length splitting into its 5 carpels; leaves lobed or dissected. Fam. 1. *Geraniaceae*.

Capsule 2-5-celled, not splitting into its carpels.

Stamens 2-3 times as many as the petals; leaves 3-foliolate. Fam. 2. *Oxalidaceae*.

Stamens as many as the petals; leaves entire. Fam. 3. *Linaceae*.

Leaves pinnately compound. Fam. 4. *Zygophyllaceae*.

Trees or shrubs with compound leaves, often punctate; flowers dioecious or polygamous.

Leaves punctate. Fam. 5. *Rutaceae*.

Leaves not punctate, the bitter bark with oil-sacks.

Fam. 6. *Simarubaceae*.

Flowers very irregular; petals 3; stamens usually 8; herbs.

Fam. 7. *Polygalaceae*.

Flowers regular, often apetalous, small, monocious; carpels mostly 3; herbs or low shrubs; mostly with milky juice.

Fam. 8. *Euphorbiaceae*.

Stamen only 1; perianth none; styles 2; small aquatic or rarely terrestrial plants with opposite, entire leaves.

Fam. 9. *Callitrichaceae*.

Family 1. GERANIAOEAE J. St. Hil. Geranium Family.

Anthers 10, rarely 5; carpel-tails not hairy inside.

1. *Geranium*.

Anthers 5; carpel-tails bearded inside.

2. *Erodium*.

1. GERANIUM L. CRANE'S-BILL.

Perennial; flowers 2.5 cm. broad or more.

1. *G. maculatum*.

Annals or biennials; flowers 4-12 mm. broad.

Leaves 3-divided; segments pinnatifid, thin.

2. *G. Robertianum*.

Leaves pedately lobed or dissected.

Peduncles longer than the leaves; carpels smooth.

3. *G. columbinum*.

Peduncles short; carpels rugose or hairy.

Seeds reticulated or pitted.

Glandular-pubescent with long, white hairs.

4. *G. rotundifolium*.

Pubescent with short hairs; leaves deeply lobed.

Flowers pale purple; seeds minutely reticulated.

5. *G. Carolinianum*.

Flowers deep purple; seeds pitted.

6. *G. dissectum*.

Seeds smooth or nearly so.

Stamens 5; carpels hairy, not rugose.

7. *G. pusillum*.

Stamens 10; carpels glabrate, rugose.

8. *G. molle*.

1. *GERANIUM MACULATUM* L. M. p. 573. Open woods. Summer.

2. *GERANIUM ROBERTIANUM* L. *Herb-Robert*. M. p. 573. Rocky woods and sandy places. Summer.

Philadelphia—Fairmount Park (Ha.), Robinson's Knoll (Te.). *Bucks*—Narrowsville, Argus (Cr.), Rock Hill (Fr.), Point Pleasant (Ws.). *Berks*—Monocacy (Me.). *Northampton*—Easton (Ca.).

Cumberland—Vineland (Ab.). *Atlantic*—Ventnor (Gi.), Atlantic City, I. Burk (He.). *Cape May*—Peermont (Br.), Anglesea (U. C. S.), Wildwood (Wn.). *Monmouth*—Sandy Hook (C.). *Hunterdon*—Prallsville, Sergeantsville (C.).

3. *GERANIUM COLUMBINUM* L. M. p. 574. Fields and along roadsides. Summer.

Bucks—Red Hill, Moyer (P.). *Delaware*—Concord (W. Tr.). *Chester*

- Falls of French Creek (Mac.). Lancaster—Safe Harbor (Ca.), opposite York Furnace, Martie Forge (St.). Dauphin—Rockville (Wn.).
 Burlington—Vincentown (C.). Camden—Kaighn's Point (Ja.), Had-
 donfield (Te.). Gloucester—Near Mickleton (He.). Salem—Near Woods-
 town (Li.).
 New Castle—Townsend, Commons; south of Blackbird.
4. GERANIUM ROTUNDIFOLIUM L. M. p. 574. Ballast. Summer.
 Camden—Kaighn's Point (Wn.).
5. GERANIUM CAROLINIANUM L. M. p. 574. Barren soil. Summer.
6. GERANIUM DISSECTUM L. M. p. 574. Waste places. Summer.
 Camden—Kaighn's Point (Ja.). Gloucester—Woodbury (C.), Swedes-
 boro (Li.). Salem—Mount Pleasant (Pe.), Woodstown (Wa.). Atlantic
 —Atlantic City (Fu.).
7. GERANIUM FUSILLUM Burm. f. M. p. 574. Waste places. Summer.
 Philadelphia—Greenwich Point (Te.). Berks—(P.). Northampton—
 (P.).
 Burlington—Moorestown, Pemberton (C.). Camden—Camden, Mart.
 (B. C.), Gloucester, C. E. Smith (Fu.) (Te.), Cooper's Point (C.). Salem
 Woodstown (Wa.). Cape May—Cape May (Ha.) (He.), Tuckahoe (Ja.).
 Atlantic—Absecon, May's Landing (Wn.). Monmouth—Keyport (C.).
 Mercer—Princeton, Trenton (C.).
 New Castle—South of Stanton Station, Tatnall; east side of Brandy-
 wine Creek below railroad bridge, Canby.
8. GERANIUM MOLLE L. M. p. 574. Waste places. Summer.
 Philadelphia—Ballast (P.). Bucks—Sellersville (Fr.).
 Cape May—Tuckahoe (Ke.).

2. ERODIUM L'Her.

1. ERODIUM CICUTARIUM (L.) L'Her. Stork's Bill. M. p. 575. Along rail-
 roads and ballast. Spring and summer.
 ERODIUM MOSCHATUM Willd. M. p. 575. Ballast. Summer.
 Camden—Kaighn's Point (Ja.).

Family 2. OXALIDACEAE Lindl. Wood-sorrel Family.

1. OXALIS L. WOOD-SORREL.

Acaulescent; flowers rose-purple.

1. *O. violacea*.

Caulescent; flowers yellow.

Pedicels reflexed at maturity; pubescent with appressed hairs.

Stem or branches creeping; introduced.

2. *O. corniculata*.

Stems erect, or if decumbent, not creeping.

3. *O. stricta*.

Stems pubescent with appressed hairs.

4. *O. Brittoniae*.

Stem pubescent with spreading hairs or glabrous.

Pedicels erect or spreading; pubescent with spreading hairs.

Leaves reddish-purple.

5. *O. rufa*.

Leaves green.

6. *O. cymosa*.

1. OXALIS VIOLACEA L. M. p. 576. Rocky places and open woods. Spring.
2. OXALIS CORNICULATA L. M. p. 576. Ballast and weed in green-houses.
 Spring to fall.

3. *OXALIS STRICTA* L. M. p. 576. Woods and fields. Spring to fall.
4. *OXALIS BRITTONIAE* Small. M. p. 577. Woods and fields. Early summer.
Lancaster—(P.).
Mercer—Trenton.
5. *OXALIS RUFA* Small. M. p. 577. Woods. Spring and summer.
Bucks—Sellersville (Fr.).
6. *OXALIS CYMOSA* Small. M. p. 577. Woods and fields. Spring to fall.

Family 3. **LINACEAE** Dumort. **Flax Family.**

1. **LINUM** L. **FLAX.**

Flowers blue.

Flowers yellow.

Leaves and bracts entire.

Stem nearly terete, corymbosely branched; usually only the lowest leaves opposite.

Leaves thin, oblong or oblanceolate, spreading.

Leaves firm, appressed-ascending.

Stem angled, racemosely branched; leaves below the branches mostly all opposite.

Upper leaves and bracts glandular-ciliate.

1. *L. usitatissimum*.
2. *L. Virginianum*.
3. *L. medium*.
4. *L. striatum*.
5. *L. sulcatum*.
1. **LINUM USITATISSIMUM** L. *Common Flax*. M. p. 578. Roadsides and waste places. Summer.
2. **LINUM VIRGINIANUM** L. M. p. 579. Dry woods. Summer.
3. **LINUM MEDIUM** (Planch.) Britton. M. p. 579. Dry soil. Summer.
Bucks—Perkasie, Three-mile Run (Fr.).
Atlantic—Egg Harbor (Li.).
4. **LINUM STRIATUM** Walt. M. p. 579. Wet or boggy grounds. Summer.
Bucks—Rock Hill, Tullytown, Penn. Valley (Fr.), Durham, Ruth (Fr.).
Montgomery—(P.). Chester—London Grove (Le.). Lancaster—New Texas (Ca.), Little Britain Twp. (Pr.). Berks—(P.). Lehigh—Lehigh Mountain, Salsburg (Kr.). Northampton—(P.). Dauphin—(P.).
New Jersey—Common.
New Castle—Thompson's, Deringer's.
5. **LINUM SULCATUM** Riddell. M. p. 579. Dry soil. Summer.
Bucks—Bristol (B. Sm.). Delaware—Tinicum (B. Sm.). Lehigh—Lehigh Mountain (Kr.).
LINUM TERRESTRIS L. Ballast.
Camden—Camden, C. A. Boice (B. C.).

Family 4. **ZYGOPHYLLACEAE** Lindl. **Caltrop Family.**

1. **TRIBULUS** L. **CALTROP.**

1. **TRIBULUS TERRESTRIS** L. M. p. 580. Ballast. Summer.
Philadelphia—Philadelphia (Te.).
Camden—Camden, C. A. Boice (B. C.).

Family 5. **RUTACEAE** Juss. **Rue Family.**

Pistils 2-5, distinct; fruit fleshy, capsular.
Pistil 1, 2-celled; fruit a samara.

1. *Xanthoxylum*.
2. *Ptelea*.

1. XANTHOXYLUM L.

1. *XANTHOXYLUM AMERICANUM* Mill. *Northern Prickly Ash, Toothache-tree.* M. p. 581. Rocky woods and river banks. Spring.

Philadelphia—Stenton (Br.), Woodlands Cemetery (Ha.), 46th and Walnut streets, Gray's Lane and Rabbit's Lane, W. Philadelphia (Mac.), Mayland's Garden (Te.), Angora (VP.), near Gray's Ferry (Wn.). *Bucks*—Rock Hill (Fr.). *Montgomery*—Tylersport (Ja.), Sumneytown (VP.), Uhl's Mill (Wn.). *Delaware*—Middletown (S. Tr.), Concord (W. Tr.). *Lancaster*—(P.). *Berks*—(P.). *Northampton*—(P.). *Monmouth*—Freehold (C.). *Hunterdon*—Rosemont (C.).

XANTHOXYLUM CLAVA-HERCULIS L. *Southern Prickly Ash.* M. p. 581. Sandy soil; from the South.
Delaware—Painter's Arboretum (Fu.).

2. PTELEA L.

1. *PTELEA TRIPOLIATA* L. *Shrubby Trefoil, Hop-tree.* M. p. 581. Woods. Early summer.

Philadelphia—West Philadelphia, Gray's Ferry (Cr.). *Bucks*—Ridge's Island, Delaware river (Fr.), Stover's Island, Moyer (Fr.), near Morrisville (Ws.). *Delaware*—Concord (W. Tr.). *Berks*—(P.). *Northampton*—Easton, Porter (B. C.).

Mercer—Crosswick's Creek (C.). *Hunterdon*—Ridge Island (C.).
New Castle—Becoming frequent about nurseries, 18th street.

Family 6. *SIMARUBACEAE* DC. *Ailanthus Family.*

1. AILANTHUS Desf.

1. *AILANTHUS GLANDULOSUS* Desf. *Tree of Heaven.* M. p. 582. Cultivated and escaped. Early summer.

Family 7. *POLYGALACEAE* Reichenb. *Milkwort Family.*

1. POLYGALA L. MILKWORT.

Flowers in solitary spikes or spike-like racemes, terminating the stem and branches.

Basal leaves spatulate or obovate; flowers orange-yellow.

1. *P. lutea.*

Basal leaves inconspicuous or wanting; flowers not yellow.

Leaves, at least the lower, verticillate; spikes 8-18 mm. thick, blunt; flowers purple to greenish-white.

Spikes sessile or nearly so; wings deltoid.

2. *P. cruciata.*

Spikes peduncled; wings lanceolate-ovate.

3. *P. brevifolia.*

Leaves verticillate and alternate; spikes 4-6 mm. thick, acute.

Verticillate leaves predominating; spikes dense; flowers green to purplish.

4. *P. verticillata.*

Alternate leaves predominating; spikes loose, long; flowers more purple.

5. *P. ambigua.*

Leaves all alternate.

Petals united into a cleft-tube 6-8 mm. long; flowers pink.

6. *P. incarnata.*

Petals not conspicuously united into a tube.

Spikes ovoid to globose.

Bracts persistent; flowers rose-purple to white.

7. *P. viridescens.*

Bracts deciduous; flowers rose-purple.

8. *P. Mariana*.

Spikes cylindric.

Leaves oblanceolate to linear, 4-12 mm. long; flowers greenish to purplish.

9. *P. Nuttallii*.

Leaves lanceolate, 2.5-5 cm. long; flowers white or greenish.

10. *P. Senega*.

Flowers distinctly racemose, rose or purple.

11. *P. polygama*.

Flowers 1-4, large, axillary, but apparently terminal, rose-purple to white.

12. *P. paucifolia*.

1. *POLYGALA LUTEA* L. M. p. 583. Pine-barren swamps. Summer.

Bucks—Bristol (Fr.).

New Jersey—Common in the pine-barrens.

2. *POLYGALA CRUCIATA* L. M. p. 583. Sandy swamps. Summer.

Philadelphia—Germantown (Me.). *Bucks*—Near Bristol (Fr.). *Montgomery*—Willow Grove (VP.) (Re.). *Delaware*—Tinicum (Fu.) (B. Sm.). *Chester*—Coatesville, H. E. Stone (B. C.). *Lancaster*—New Texas (Ca.), Lyle (Pr.).

New Jersey—Common in the pine-barrens.

3. *POLYGALA BREVIFOLIA* Nutt. M. p. 583. Sandy swamps. Summer.

Burlington—Atsion, Mart. (B. C.), Woodmansie (He.), Bear Swamp, Speedwell (St.), Pemberton (Te.). *Camden*—Lucaston (VP.). *Atlantic*—Absecon, Mart. (B. C.), Pleasant Mills, E. A. Rau (B. C.), Hammononton, Dr. J. B. Brinton (He.). *Ocean*—Toms River (Fu.), Forked River (Ja.), Whiting (Wn.).

4. *POLYGALA VERTICILLATA* L. M. p. 583. Dry or moist soil. Summer.

5. *POLYGALA AMBIGUA* Nutt. M. p. 584. Dry soil. Summer.

Pennsylvania—Common.

New Jersey—Common.

New Castle—Hands, etc. Scarce.

6. *POLYGALA INCARNATA* L. M. p. 584. Dry soil. Summer.

Chester—(P.). *Lancaster*—Pleasant Grove (Ca.), New Texas (Pr.). *Camden*—Haddonfield (C.). *Gloucester*—Mickleton (He.), Swedesboro (Li.). *Cumberland*—Bridgeton (C.).

New Castle—Near Newark, Kilvington; Townsend, Canby; Milltown, Commons; Iron Hill. Rare.

7. *POLYGALA VIRIDESCENS* L. M. p. 584. Sandy or moist ground. Summer.

8. *POLYGALA MARIANA* Mill. M. p. 584. Dry soil. Summer.

Camden—Longacoming (C.). *Gloucester*—North of Swedesboro (Li.). *Atlantic*—Hammononton (Cr.). *Cape May*—Woodbine (Br.), Cape May Court House (St.).

New Castle—Townsend, Canby.

9. *POLYGALA NUTTALLII* T. & G. M. p. 584. Dry, sandy soil. Autumn.

Pennsylvania—Common.

New Jersey—Common.

New Castle—Townsend, Canby; Dupont's Woods on the W. & G. V. Turnpike. Rare.

10. *POLYGALA SENEGA* L. *Seneca Snakeroot*. M. p. 584. Rocky soil. Spring.

Philadelphia—Byberry, *Mart.* (B. C.), Allen's Lane near Township Line (Je.). *Bucks*—Springfield (Fr.). *Delaware*—On Serpentine, Newtown, Dr. Geo. Smith (B. Sm.), Chad's Ford (Te.). *Chester*—Coatesville, H. E. Stone (B. C.), Westtown (VP.). *Lancaster*—(P.).

New Castle—Wilmington (He.), McCullough's, Tatnall; Adams, Canby; Centerville, *Commons*.

10a. *POLYGALA SENEGA LATIFOLIA* T. & G. M. p. 584. Rocky soil. Spring. *New Castle*—Mount Cuba, Dixon's, *Commons*.

11. *POLYGALA POLYGAMA* Walt. M. p. 585. Dry, sandy soil. Early summer.

Philadelphia—(P.).

New Jersey—Common in the pine-barrens, especially near the coast.

12. *POLYGALA PAUCIFOLIA* Willd. M. p. 585. Moist, rich woods. Early summer.

Bucks—Near Quakertown (Fr.). *Montgomery*—Green Lane (VP.).

Chester—(P.). *Lancaster*—Pleasant Grove (Ca.), Octoraro Creek south of Christiansa (St.). *Berks*—Hamburg (Cr.). *Lehigh*—Blue Mountain in Lynn (Kr.). *Northampton*—(P.). *Dauphin*—(P.).

Monmouth—Freehold (C.). *Somerset*—Peapack, Raritan (C.).

New Castle—Mount Cuba.

Family 8. EUPHORBIACEAE J. St. Hil. Spurge Family.

Flowers not in an involucre, with a true calyx.

Ovules 2 in each cavity of the ovary.

1. *Phyllanthus*.

Ovules 1 in each cavity of the ovary.

Plants clothed with stellate pubescence or scales.

Ovary and dehiscent capsule 2-4-celled, mostly 3-celled.

2. *Croton*.

Ovary and capsule 1-celled, achene-like.

3. *Crotonopsis*.

Plants variously pubescent, with simple hairs.

4. *Acalypha*.

Flowers in an involucre, the calyx represented by a minute scale at the base of the filament-like pedicel.

5. *Euphorbia*.

1. PHYLLANTHUS L.

1. *PHYLLANTHUS CAROLINENSIS* Walt. M. p. 586. Gravelly banks. Summer.

Chester—(P.). *Lancaster*—York Furnace, Peach Bottom (Br.).

2. CROTON L.

1. *CROTON GLANDULOSUS* L. M. p. 586. Ballast. Spring to winter.

Philadelphia—Old Navy Yard (B. C.).

New Castle—A single plant at New Castle, *Commons*.

3. CROTONOPSIS Michx.

1. *CROTONOPSIS LINEARIS* Michx. M. p. 587. Dry, sandy soil. Summer.

Bucks—Bristol, *Mart.* (B. C.). *Delaware*—Tinicum, T. C. Palmer (Fu.).

Burlington—Taunton (Br.), Atsion (Le.), Batsto (Re.). *Camden*—Kirkwood, Lindenwold (Br.). *Gloucester*—Woodbury (C.). *Atlantic*—Hammononton (Cr.) (Je.), Pleasant Mills, Dr. J. B. Brinton (He.). *Ocean*—Manchester, Southwark (C.).

4. ACALYPHA L. THREE-SEEDED MERCURY.

Staminate and pistillate flowers in separate spikes or racemes; capsule spiny.

1. *A. ostryaefolia*.

Staminate and pistillate flowers in the same spike or raceme; capsule smooth.

Plant not glandular; bract palmately many-lobed, equalling or exceeding the staminate spike.

2. *A. Virginica*.

Plant glandular; bract many-cleft, shorter than the spike.

3. *A. gracilens*.

1. ACALYPHA OSTRYAEFOLIA Ridd. M. p. 588. Woods. Summer.

Bucks—Morrisville (P.).

Mercer—Princeton, Trenton (C.).

2. ACALYPHA VIRGINICA L. M. p. 588. Fields and open places. Summer.

3. ACALYPHA GRACILENS A. Gray. M. p. 588. Sandy, dry soil. Summer.

Bucks—Plumstead, Moyer (P.). Delaware—(P.). Chester—(P.).

Gloucester—Mickleton (He.).

RICINUS COMMUNIS L. Castor-oil Plant. Cultivated and sometimes escaped. Summer.

5. EUPHORBIA L. SPURGE.

Glands of the involucre with petal-like appendages.

Leaves opposite, inequilateral, their bases more or less oblique.

Leaves entire; seeds smooth.

1. *E. polygonifolia*.

Leaves serrate or dentate; plants prostrate or spreading.

Seeds gray or white.

2. *E. hirsuta*.

Seeds brown or black.

3. *E. maculata*.

Leaves serrate or dentate; plants erect or ascending.

4. *E. nutans*.

Leaves alternate or scattered on the stem except a whorl subtending the umbel.

Bracts and leaves of the umbel small and green; seeds ovoid, smooth, sparingly pitted.

5. *E. corollata*.

Bracts and leaves of the umbel large, white-margined; seeds ovoid, globose, reticulate-tuberculate.

6. *E. marginata*.

Glands of the involucre without petal-like appendages.

Leaves mostly opposite; herbage glabrous.

Plants slender; stems or branches forked.

Annual; stem branched at the base; leaves, or some of them, oblique at the base.

1. *E. polygonifolia*.

Perennial; stems several from a stout root; leaves not oblique at the base.

8. *E. Ipecacuanhae*.

Plants stout; stem usually simple below, topped by an umbel.

9. *E. Lathyris*.

Leaves mostly opposite; herbage pubescent.

7. *E. dentata*.

Leaves alternate or scattered.

Leaves serrulate; glands of the involucre oblong, oval, or orbicular.

11. *E. Helioscopia*.

Leaves entire; glands of the involucre crescent-shaped or reniform.

Annual or biennial; seeds pitted.

Capsules with 2-crested lobes.

12. *E. Peplus*.

Capsules with rounded lobes.

13. *E. commutata*.

Perennial.

Glands reniform or oblong without horns.

10. *E. Darlingtonii*.

Glands crescent-shaped, with horns.

14. *E. Cyparissias*.

1. EUPHORBIA POLYGONIFOLIA L. M. p. 591. Sandy shores. Summer.

New Jersey—Common.

New Castle—Collins, Woodland Beach.

2. *EUPHORBIA HIRSUTA* (Torr.) Wiegand. M. p. 592. Sandy or gravelly soil. Summer.
Bucks—Tullytown, Hilltown, Nockamixon (Fr.). *Lancaster*—(P.).
Northampton—(P.).
3. *EUPHORBIA MACULATA* L. M. p. 592. Open places and roadsides. Summer and fall.
4. *EUPHORBIA NUTANS* Lag. M. p. 593. Fields and thickets. Summer and fall.
5. *EUPHORBIA COROLLATA* L. M. p. 593. Rich or sandy soil. Spring to fall.
6. *EUPHORBIA MARGINATA* Pursh. M. p. 594. Escaped from gardens. Summer.
7. *EUPHORBIA DENTATA* Michx. M. p. 594. Dry or moist soil. Summer and fall.
Lancaster—(P.).
8. *EUPHORBIA IPECACUANHAE* L. M. p. 594. Sandy soil. Spring to fall.
Bucks—Penn Valley (Cr.).
New Jersey—Common.
9. *EUPHORBIA LATHYRIS* L. M. p. 594. Waste places. Summer.
Bucks—Near Sellersville (Fr.). *Delaware*—Concord (W. Tr.). *Chester*—(P.). *Lancaster*—(P.). *Northampton*—(P.).
Monmouth—Keyport (C.). *Hunterdon*—Rosemont (C.).
New Castle—Centerville, Commons; Bear.
10. *EUPHORBIA DARLINGTONII* A. Gray. M. p. 594. Copses. Summer.
Chester—Coatesville, H. E. Stone (B. C.). *Lancaster*—(P.).
Salem—Woodstown.
New Castle—South of New Garden, Joshua Hoopes; Southwood, Canby.
11. *EUPHORBIA HELIOSCOPIA* L. M. p. 595. Ballast. Summer and fall.
Camden—Kaighn's Point (Ja.).
12. *EUPHORBIA PEPLUS* L. M. p. 595. Waste places. Summer.
Philadelphia—Girard Point (Te.). *Delaware*—Lansdowne, Dr. Emily G. Hunt (He.) (Pe.). *Chester*—West Chester, Dr. Geo. Martin (Fu.).
Lancaster—(P.). *Northampton*—Streets of Easton (P.).
Camden—Camden, I. Burk (He.). *Mercer*—Trenton (C.).
New Castle—Gardens, Wilmington, Canby.
13. *EUPHORBIA COMMUTATA* Engelm. M. p. 595. Along streams and shady slopes. Spring and summer.
Lancaster—York Furnace (Cr.) (Li.), Safe Harbor (P.).
14. *EUPHORBIA CYPARISSIAS* L. M. p. 596. Escaped from gardens. Summer.
EUPHORBIA SEGETALIS L. Ballast.
Philadelphia—Philadelphia, C. A. Boice (B. C.).

Family 9. **CALLITRICHACEAE** Lindl. **Water-starwort Family.**

1. **CALLITRICHE** L. **WATER-STARWORT.**

- Fruit short-peduncled; bracts wanting; terrestrial. 1. *C. Austini*.
Fruit sessile; aquatic, or some forms growing in mud.
Bracts present.

Fruit oval, flat on the face, longer than the styles.

2. *C. palustris*.

Fruit obovate, plano-convex, shorter than the styles.

3. *C. heterophylla*.

Bracts none; leaves all linear, submerged.

4. *C. bifida*.

1. *CALLITRICHE AUSTINI* Engelm. M. p. 596. Damp, shaded places. Summer.

2. *CALLITRICHE PALUSTRIS* L. M. p. 597. In cold or running water. Summer.

3. *CALLITRICHE HETEROPHYLLA* Pursh. M. p. 597. Ponds and slow streams. Summer.

Bucks—Rock Hill (Fr.) (Ja.) (Ke.). *Berks*—Hamburg (Ke.). *Northampton*—(P.).

New Jersey—Common.

New Castle—Blackbird Head, *Canby*.

4. *CALLITRICHE BIFIDA* (L.) Morong. M. p. 597. Flowing water. Summer. *Bucks*—Near Sellersville (Fr.).

Order 16. SAPINDALES.

Flowers regular or nearly so (except in Hippocastanaceae, which are trees or shrubs with digitately compound leaves).

Petals none; flowers monœcious or diœcious; leaves evergreen.

Stamens mostly 3; low heath-like shrubs.

Fam. 1. *Empetraceae*.

Stamens 4-7; herbs with broad leaves and spiked flowers.

Fam. 2. *Buzaceae*.

Petals present; leaves deciduous except some Ilicaceae.

Low annual herbs, with pinnately-divided leaves, the stamens twice as many as the petals.

Fam. 3. *Limnanthaceae*.

Trees or shrubs, rarely herbaceous vines.

Ovary 1-celled; fruit a small drupe.

Fam. 4. *Anacardaceae*.

Ovary 2-several-celled.

Leaves simple, pinnately veined.

Seeds not arilled.

Fam. 5. *Ilicaceae*.

Seeds arilled; ovules erect; capsule fleshy.

Fam. 6. *Celastraceae*.

Leaves simple and palmately veined, or compound.

Fruit a bladder 3-lobed capsule.

Fam. 7. *Staphyleaceae*.

Fruit of 2-winged samaras.

Fam. 8. *Aceraceae*.

Fruit a leathery capsule; flowers irregular; leaves digitately compound.

Fam. 9. *Hippocastanaceae*.

Flowers very irregular, the posterior sepal large, saccate; succulent herbs, the capsule elastically dehiscent.

Fam. 10. *Balsaminaceae*.

Family 1. EMPETRACEAE Dumort. Crowberry Family.

1. COREMA Don.

1. *COREMA CONRADII* Torr. *Broom Crowberry*. M. p. 598. Sandy pine-barrens. Early spring.

Burlington—"The Plains."

Family 2. **BUXACEAE** Dumort. **Box Family.**

1. **PACHYSANDRA** Michx.

1. **PACHYSANDRA PROCUMBENS** Michx. *Mountain Spurge*. M. p. 599. Introduced from the South. Woods. Early spring.
Delaware—Darby Creek near Haverford (Le.), Collen Brook, Upper Darby and Radnor (B. Sm.).

Family 3. **LIMNANTHACEAE** Lindl. **False-mermaid Family.**

1. **FLOERKEA** Willd.

1. **FLOERKEA PROSERPINACOIDES** Willd. *False Mermaid*. M. p. 599. Marshes and river banks. Spring.

Family 4. **ANACARDIACEAE**. **Sumac Family.**

1. **RHUS** L. **SUMAC.**

Fruit pubescent; stone smooth.

Rachis of the leaf wing-margined.

1. *R. copallina*.

Rachis of the leaf nearly terete.

Foliage and twigs velvety-pubescent.

2. *R. hirta*.

Foliage of the twigs mostly glabrous and glaucous.

3. *R. glabra*.

Fruit glabrous; stone striate.

Leaflets 7-13, glabrous.

6. *R. vernix*.

Leaflets 3, more or less pubescent beneath.

7. *R. radicans*.

1. **RHUS COPALLINA** L. *Black Sumac*. M. p. 600. Dry soil. Summer.
 2. **RHUS HIRTA** (L.) Sudw. *Staghorn Sumac*. M. p. 600. Dry, rocky soil. Spring.
 3. **RHUS GLABRA** L. *Scarlet Sumac*. M. p. 600. Rocky or barren soil. Summer.
 4. **RHUS VERNIX** L. *Poison Sumac*. M. p. 601. Swamps. Early summer.
 5. **RHUS RADICANS** L. *Poison Ivy, Poison Oak*. M. p. 601. Thickets. Spring.

Family 5. **ILICACEAE** Lowe. **Holly Family.**

Petals oblong or obovate, slightly united.

1. *Ilex*.

Petals linear, distinct.

2. *Ilicioides*.

1. **ILEX** L.

Leaves thick, evergreen, persistent.

Nutlets ribbed; leaves spiny-toothed.

1. *I. opaca*.

Nutlets not ribbed; leaves dotted beneath.

2. *I. glabra*.

Leaves thin, deciduous.

Flowers all short-pedicelled.

3. *I. verticillata*.

Staminate flowers on long and slender pedicels.

4. *I. laevigata*.

1. **ILEX OPACA** Ait. *American Holly*. M. p. 603. Moist woodlands. Spring.
Bucks—Bristol (Fr.). *Delaware*—Tinicum, Dr. Geo. Smith (B. Sm.).
Chester—(P.). *Lancaster*—York Furnace (Cr.). *Dauphin*—(P.).
New Jersey—Common.
New Castle—Holly Oak, Old Blue Bell, Folly Woods, Silverside. Rare in northern part of county.

2. *ILEX GLABRA* (L.) A. Gray. *Inkberry*. M. p. 603. In sandy soil. Early summer.
3. *ILEX VERTICILLATA* (L.) A. Gray. *Black Alder, Winterberry*. M. p. 604. Swamps. Early summer.
- 3a. *ILEX VERTICILLATA CYCLOPHYLLA* Robinson. M. p. 604.
Bucks—Durham, Ruth (Fr.).
4. *ILEX LAEVIGATA* (Pursh.) A. Gray. M. p. 604. Swamps. Spring.
Bucks—Bristol, Mart. (Fr.). *Lancaster—*(P.).
Camden—Cedar Brook (Ke.), *Kirkwood* (Wn.). *Gloucester—Mickleton*, frequent (He.), *Swedesboro* (Li.), *Westville* (Wn.). *Atlantic—Egg Harbor* (Cr.). *Monmouth—Keyport* (C.). *Mercer—Princeton Junction* (C.).
New Castle—Peach's. Rare.

2. *ILICIOIDES* Dumont.

1. *ILICIOIDES MUCRONATA* (L.) Britton. *Mountain Holly*. M. p. 604. Swamps. Spring.
Northampton—Pen Argyl (U. C. S.).
Camden—Kaighn's Point, Mart. (B. C.), *Sicklerville, Dr. J. B. Brinton* (Ke.). *Atlantic—Hammonton* (C.).

Family 6. **CELASTRACEAE** Lindl. **Staff-tree Family.**

Leaves opposite.

1. *Euonymus*.

Leaves alternate; woody vine.

2. *Celastrus*.1. *EUONYMUS* L.

Pods tuberculate; low shrubs; flowers greenish-pink.

Erect or ascending; leaves ovate-lanceolate, acuminate.

1. *E. Americanus*.

Decumbent, rooting at the nodes; leaves obovate, obtuse.

2. *E. obovatus*.

Pods smooth; high shrubs or small trees.

3. *E. atropurpureus*.

1. *EUONYMUS AMERICANUS* L. *Strawberry Bush*. M. p. 605. Low woods. Spring.
2. *EUONYMUS OBOVATUS* Nutt. M. p. 605. Low or wet places. Spring.
Bucks—Langhorne, Mart. (Fr.).
Gloucester—Mickleton, common (He.). *Somerset—Rocky Hill* (C.).
Hunterdon—Rosemont (C.).
3. *EUONYMUS ATROPURPUREUS* Jacq. *Burning Bush, Wahoo*. M. p. 605. Woods. Early summer.
EUONYMUS EUROPAEUS L. *Spindle-tree*. M. p. 605. Escaped from cultivation.

2. *CELASTRUS* L.

1. *CELASTRUS SCANDENS* L. *Climbing Bittersweet*. M. p. 606. Rich soil. Early summer.

Family 7. **STAPHYLEACEAE** DC. Bladder-nut Family.

1. STAPHYLEA L.

1. *STAPHYLEA TRIFOLIA* L. *Bladder-nut*. M. p. 606. Thickets in moist soil. Spring.

Family 8. **ACERACEAE** St. Hil. Maple Family.

1. ACER L. MAPLE.

Leaves simple, palmately lobed.

Flowers in dense, sessile, lateral clusters, unfolding before the leaves.

Petals none; ovary tomentose; samaras divergent.

1. *A. saccharinum*.

Petals present; ovary glabrous; samaras incurved.

2. *A. rubrum*.

Flowers corymbose, unfolding with the leaves.

Leaves pale and nearly glabrous beneath. 3. *A. Saccharum*.

Leaves green and pubescent, at least on the veins beneath.

4. *A. nigrum*.

Flowers racemed, terminal, unfolding after the leaves.

Racemes drooping; leaves finely serrate. 5. *A. Pennsylvanicum*.

Racemes erect; leaves coarsely serrate. 6. *A. spicatum*.

7. *A. Negundo*.

Leaves pinnate.

1. *ACER SACCHARINUM* L. *White or Silver Maple*. M. p. 607. Common in cultivation; also river banks. Early spring.

Delaware—Chad's Ford along Brandywine (B. Sm.). *Dauphin*—Steelton (Wn.).

Mercer—Above Trenton along the Delaware (He.).

New Castle—Brandywine Creek above Washington street, both north and south side.

2. *ACER RUBRUM* L. *Red or Swamp Maple*. M. p. 607. Swamps and low grounds. Early spring.

3. *ACER SACCHARUM* Marsh. *Sugar or Rock Maple*. M. p. 607. Rich woods. Spring.

Bucks—Argus (Cr.), Sellersville (Fr.), Solebury Twp. (Ws.). *Montgomery*—Sumneytown (VP.). *Delaware*—Valley of Darby Creek (B. Sm.). *Chester*—Phoenixville, Mart. (B. C.). *Lancaster*—(P.). *Lehigh*—Lehigh Mountain (Kr.). *Northampton*—Easton, Porter (B. C.). *Dauphin*—Harrisburg (Wn.).

Mercer—Princeton, Trenton (C.).

New Castle—Rockland, Guyancourt. Rare.

4. *ACER NIGRUM* Michx. *Black Sugar Maple*. M. p. 608. Rich soil. Spring.

Bucks—Rock Hill (Fr.). *Lancaster*—Peach Bottom (Ca.). *Northampton*—(P.).

Hunterdon—Locktown (C.).

5. *ACER PENNSYLVANICUM* L. *Striped or Goosefoot Maple*. M. p. 608. Rich, rocky woods. Spring.

Bucks—(P.). *Montgomery*—Mill Creek (Ha.). *Delaware*—Painters' Arboretum (He.). *Berks*—Hamburg (Li.). *Blue Ridge* (Sch.). *Dauphin*—Cold Springs (P.).

6. *ACER SPICATUM* Lam. *Mountain Maple*. M. p. 608. Damp, rocky woods. Spring.

Bucks—Pipersville (Fr.), Narrowsville (Ke.), Point Pleasant, river shore (Ws.). *Montgomery*—Sumneytown (VP.). *Delaware*—Painters' Arboretum (He.). *Chester*—Valley Forge (Le.) (St.). *Berks*—(P.). *Lehigh*—Along the Lehigh (Kr.). *Northampton*—(P.).

Somerset—Peapack (C.). *Hunterdon*—Stockton (C.).

7. *ACER NEGUNDO* L. *Ash-leaved Maple, Box Elder*. M. p. 608. River banks. Spring.

ACER PSEUDO-PLATANUS L. *Sycamore Maple*. In cultivation. Spring.

ACER CAMPESTRIS L. Occasionally escaped from cultivation. Spring.

ACER PLATANOIDES L. *Norway Maple*. Occasionally escaped from cultivation. Spring.

Family 9. **HIPPOCASTANACEAE** T. & G. **Buckeye Family.**

AESCULUS HIPPOCASTANUM L. *Horse-chestnut*. Cultivated. Early summer.

AESCULUS GLABRA Willd. *Fetid or Ohio Buckeye*. Cultivated. Spring.

Philadelphia—Bartram's Garden (He.) (Li.).

AESCULUS OCTANDRA Marsh. *Sweet Buckeye*. Cultivated. Spring.

AESCULUS OCTANDRA HYBRIDA (DC.) Sarg. Cultivated. Spring. *Delaware*—Painters' Arboretum (He.).

AESCULUS PAVIA L. *Red Buckeye*. Cultivated. Spring.

Philadelphia—Bartram's Garden (Li.).

AESCULUS PARVIFLORA Walt. Cultivated. Spring.

Philadelphia—Bartram's Garden (Ja.).

Family 10. **BALSAMINACEAE** Lindl. **Jewel-weed Family.**

1. *IMPATIENS* L. **BALSAM. JEWEL-WEED. TOUCH-ME-NOT.**

Flowers orange or orange-yellow, mottled; spur incurved. 1. *I. biflora*.
Flowers pale yellow; spur short, spreading. 2. *I. aurea*.

1. *IMPATIENS BIFLORA* Walt. *Spotted Touch-me-not*. M. p. 611. Sandy, moist places. Summer.

2. *IMPATIENS AUREA* Muhl. *Pale Touch-me-not*. M. p. 611. Sandy, moist places. Summer.

Order 17. **RHAMNALES.**

Shrubs, small trees or vines; petals 4 or 5; fruit a drupe or capsule.

Fam. 1. *Rhamnaceae*.

Vines, climbing by tendrils, rarely shrubs; petals caducous, fruit a berry.

Fam. 2. *Vitaceae*.

Family 1. **RHAMNACEAE** Dumort. **Buckthorn Family.**

Ovary free from the disk; fruit a drupe.

1. *Rhamnus*.

Ovary adnate to the disk at its base; fruit dry.

2. *Ceanothus*.1. **RHAMNUS** L. **BUCKTHORN.**

1. **RHAMNUS CATHARTICA** L. *Common Buckthorn.* M. p. 612. Dry soil.
Escaped from hedges. Spring.

Philadelphia—Bartram's Garden (Cr.). *Delaware*—Fernwood, fully
naturalized (B. Sm.). *Northampton*—Easton, Porter (B. C.).

Camden—Haddonfield (C.). *Hunterdon*—Pittstown (C.).

New Castle—Near Greenhill Church, Commons; Duponts near the
Burned Keg Mill, Brandywine.

RHAMNUS CAROLINIANA Walt. M. p. 612. Wet soil. Spring.

Philadelphia—Bartram's Garden, I. Burk (He.).

Delaware—Painters' Arboretum (Fu.).

2. **CEANOTHUS** L.

1. **CEANOTHUS AMERICANUS** L. *New Jersey Tea.* M. p. 613. Dry, open
woods. Summer.

Family 2. **VITACEAE** Lindl. **Grape or Vine Family.**

Hypogynous disk present, annular or cup-shaped, lobed or glandular; leaves
not digitately compound.

1. *Vitis*.

Hypogynous disk obsolete or wanting; leaves digitately compound, leaflets
5-7.

2. *Parthenocissus*.1. **VITIS** L. **GRAPE.**

Leaves woolly beneath.

Pubescence rusty-brown; berries large, musky.

1. *V. Labrusca*.

Pubescence at length whitish; berries small, black, not musky.

2. *V. aestivalis*.

Leaves glabrate, sometimes slightly pubescent when young.

Leaves bluish-white, glaucous beneath.

3. *V. bicolor*.

Leaves not glaucous beneath.

Leaves 3-7-lobed; lobes acute or acuminate.

4. *V. vulpina*.

Leaves sharply dentate, scarcely lobed.

High-climbing; leaves large; berries sour.

5. *V. cordifolia*.

Low; leaves small; berries sweet.

6. *V. rupestris*.

1. **VITIS LABRUSCA** L. *Northern Fox-grape.* M. p. 614. Moist thickets.
Spring.

2. **VITIS AESTIVALIS** Michx. *Summer Grape.* M. p. 614. Thickets. Spring.

Philadelphia—Byberry, Mart. (B. C.), Germantown (Me.), Fairmount
Park (Pr.). *Bucks*—Near Sellersville (Fr.), Narrowsville (Mac.), Sole-
bury Twp. (Ws.). *Delaware*—Glenolden (Ke.), Swarthmore (Pr.), Val-
ley of Darby Creek and near Media (B. Sm.). *Chester*—(P.). *Lancaster*
—(P.). *Berks*—Wernersville (Te.). *Lehigh*—Along base of Blue Moun-
tain (Kr.). *Northampton*—Easton, Porter (B. C.). *Dauphin*—(P.).

3. **VITIS BICOLOR** Le Conte. *Blue or Winter Grape.* M. p. 614. Woods.
Summer.

Bucks—(P.). *Lancaster*—(P.). *Northampton*—(P.). *Dauphin*—
(P.).

4. *VITIS VULPINA* L. *Riverside Grape*. M. p. 614. Along rocky river-banks. Spring.
Philadelphia—Wissahickon (Je.). *Bucks*—Nockamixon, New Hope (Ws.). *Montgomery*—Ivy Rock (Ke.). *Delaware*—Concord, Crum Creek (Fu.). *Lancaster*—York Haven (Le.). *Northampton*—Easton, Porter (B. C.).
Gloucester—Westville (Wn.). *Hunterdon*—Stockton (C.).
5. *VITIS CORDIFOLIA* Michx. *Frost or Chicken Grape*. M. p. 615. Thickets and stream banks. Spring.
6. *VITIS RUPESTRIS* Scheele. *Sand Grape*. M. p. 615. River banks. Spring.
Lancaster—(P.). *Dauphin*—(P.).

2. *PARTHENOCISSUS* Planch.

1. *PARTHENOCISSUS QUINQUEFOLIA* (L.) Planch. *Virginia Creeper, American Ivy*. M. p. 616. Woods and thickets. Summer.

Order 18. **MALVALES.**

Stamens in several sets; anthers 2-celled; embryo straight.

Fam. 1. *Tiliaceae*.

Stamens monadelphous; anthers 1-celled; embryo curved.

Fam. 2. *Malvaceae*.

Family 1. **TILIACEAE** Juss. **Linden Family.**1. *TILIA* L.

1. *TILIA AMERICANA* L. *Linden, Basswood*. M. p. 617. Rich woods and in cultivation. Spring.

TILIA EUROPAEA L. *European Linden or Lime Tree*. Cultivated, Early summer.

Family 2. **MALVACEAE** Neck. **Mallow Family.**

Stamen-column anther-bearing at the summit.

Carpels 1-seeded.

Involucels of 6-9 bractlets.

1. *Althaea*.

Involucels of 1-3 bractlets or none.

Stigmas linear, on the inner side of the style-branches.

2. *Malva*.

Stigmas capitate, terminal.

3. *Sida*.

Carpels 2-several-seeded.

4. *Abutilon*.

Stamen-column anther-bearing below the entire or 5-toothed summit.

Carpels 1-seeded.

5. *Kosteletzkya*.

Carpels several-seeded.

6. *Hibiscus*.

1. *ALTHAEA* L.

1. *ALTHAEA OFFICINALIS* L. *Marsh Mallow*. M. p. 618. Cultivated. Summer.

Philadelphia—Germantown (Je.). *Bucks*—(P.). *Delaware*—Lima, roadside (W. Tr.). *Lancaster*—(P.).

ALTHAEA ROSEA Cav. *Hollyhock*. Escaped. Summer.

ALTHAEA HIRSUTA L. Ballast. Summer.
Camden—Camden (He.).

2. MALVA L. MALLOW.

Leaves with 5-9 shallow, angular lobes.

Petals 2-4 times the length of the calyx.

Petals 1-2 times the length of the calyx.

Leaves deeply 5-7-lobed or pinnatifid.

1. *M. sylvestris*.

2. *M. rotundifolia*.

3. *M. moschata*.

1. *MALVA SYLVESTRIS* L. M. p. 618. Waysides and waste places. Summer.

Philadelphia—Byberry, Mart. (B. C.), Walnut Lane Station (Je.),
Greenwich Point (Te.). *Bucks*—Hilltown (Fr.). *Delaware*—Swarthmore
(Pr.). *Lancaster*—(P.). *Berks*—(P.). *Northampton*—(P.).

Camden—Kaighn's Point (He.) (Ja.). *Gloucester*—Mickleton (C.).
Monmouth—Cliffwood (C.). *Hunterdon*—Rosemont (C.).

New Castle—Escaped from gardens.

2. *MALVA ROTUNDIFOLIA* L. *Common Mallow*, *Cheeses*. M. p. 618. Waysides and cultivated grounds. Spring to winter.

3. *MALVA MOSCHATA* L. *Musk Mallow*. M. p. 619. Escaped from old gardens. Summer.

MALVA CRISPA L. M. p. 618. Escaped from gardens. Summer.

MALVA PARVIFLORA L. Ballast.

Camden—Kaighn's Point (Ja.).

MALVA BOREALIS Wallr. Ballast.

Camden—Camden, C. A. Boice (B. C.).

MALVASTRUM TRIUSPIDATUM Gray. Ballast.

Camden—Camden, C. A. Boice (B. C.).

3. SIDA L.

Leaves linear, ovate or oblong, toothed.

Leaves palmately lobed or palmately veined.

1. *S. spinosa*.

2. *S. hermaphrodita*.

1. *SIDA SPINOSA* L. M. p. 620. Waste places. Summer.

2. *SIDA HERMAPHRODITA* (L.) Rusby. *Virginia Mallow*. M. p. 621. Rocky river-banks; cultivated in old gardens. Summer.

Lancaster—York Furnace, Dr. J. B. Brinton (B. C.), Safe Harbor
(Ca.), Susquehanna Valley (Le.), Columbia (Pe.).

Dauphin—Above Harrisburg (Wn.).

SIDA RHOMBIFOLIA L. Ballast.

Camden—Kaighn's Point (Wn.).

4. ABUTILON Gaertn.

1. *ABUTILON ABUTILON* (L.) Rusby. *Indian Mallow*, *Velvet-leaf*. Waste places. Summer.

5. KOSTELETZKYA Presl.

1. *KOSTELETZKYA VIRGINICA* (L.) A. Gray. M. p. 622. Marshes on the coast. Late summer.

Philadelphia—Navy Yard (P.).

Camden—Camden, ballast (C.). *Salem*—Hancock's Bridge (Wa.).
Cape May—Cape May (He.) (Te.), Wildwood (Ja.) (Mac.), Avalon
 (Ke.) (Le.), Ocean City (Pe.), Holly Beach (U. C. S.). *Atlantic*—Vent-
 nor (Gi.), Atlantic City, one specimen (Wn.). *Ocean*—Forked River,
 Lavalette (Br.), Island Heights, Waretown (C.), Seaside Park (Ha.).
Monmouth—Avon (Br.). *Middlesex*—South Amboy (C.).

New Castle—Milligan's Landing, Tatnall; Collins, Commons.

6. HIBISCUS L.

Tall perennial herbs.

Leaves white-pubescent beneath; seeds glabrous or nearly so.

Pod nearly globular, blunt.

Pod ovoid, long-pointed.

Leaves glabrous on both sides; seeds hairy.

Low, hairy annual of waste places.

1. *H. Moscheutos.*

2. *H. oculiroseus.*

3. *H. militaris.*

4. *H. Trionum.*

1. *HIBISCUS MOSCHEUTOS* L. *Swamp Rose-mallow.* M. p. 622. Brackish
 marshes. Late summer.

2. *HIBISCUS OCULIROSEUS* Britton. Brackish marshes. Late summer.

3. *HIBISCUS MILITARIS* Cav. *Sweating Weed.* M. p. 623. River banks.
 Late summer.

Lancaster—York Furnace, Dr. J. B. Brinton (B. C.), Peach Bottom
 (Ca.), island in Susquehanna near Kane's Station (Pr.), Safe Harbor
 (P.).

4. *HIBISCUS TRIONUM* L. *Bladder Ketmia, Flower-of-an-hour.* M. p. 623.
 Waste places. Late summer.

HIBISCUS SYRIACUS L. *Shrubby Althaea, Rose-of-Sharon.* M. p.
 623. Escaped from cultivation. Late summer.

Order 19. PARIETALES.

Sepals distinct, mostly persistent.

Endosperm little or none.

Trees or shrubs with alternate leaves and large, solitary axillary
 flowers. Fam. 1. *Theaceae.*

Herbs or low shrubs with opposite or verticillate leaves.

Leaves punctate or black-dotted, estipulate.

Fam. 2. *Hypericaceae.*

Leaves stipulate; minute or small marsh or aquatic herbs with
 axillary flowers. Fam. 3. *Elatinaceae.*

Endosperm copious.

Flowers regular, but the two outer sepals smaller; stamens numer-
 ous, ovules orthotropous. Fam. 4. *Cistaceae.*

Flowers irregular, some often cleistogamous; stamens 5; ovules
 anatropous. Fam. 5. *Violaceae.*

Sepals more or less united into a gamosepalous calyx.

Fam. 6. *Passifloraceae.*

Family 1. THEACEAE DC. Tea Family.

STUARTIA MALACHODENDRON L. M. p. 623. In cultivation. Spring.
Philadelphia—Bartram's Garden.

GORDONIA LASIANTHUS L. *Loblolly Bay.* M. p. 624. Cultivated.
 Early summer.

Family 2. **HYPERICACEAE** Lindl. St. John's-wort Family.

Sepals 4 in unequal pairs; petals 4.

1. *Ascyrum*.

Sepals and petals 5.

Petals yellow.

Leaves normal, not reduced to scales.

2. *Hypericum*.

Leaves reduced to minute appressed scales.

3. *Sarothra*.

Flowers pink or greenish-purple.

4. *Triadenum*.

1. **ASCYRUM** L.

Erect, 3-6 dm. high; styles 3 or 4.

1. *A. stans*.

Diffusely branched, 1-2.5 dm. high; leaves sessile; styles 2.

2. *A. hypericoides*.

1. **ASCYRUM STANS** Michx. *St. Peter's-wort*. M. p. 625. Dry soil. Summer.

Bucks—Bristol (Ca.).

New Jersey—Common in wet pine-barrens.

New Castle—Townsend, Tatnall and Canby.

2. **ASCYRUM HYPERICOIDES** L. *St. Andrew's-cross*. M. p. 625. Dry, sandy soil. Summer.

Philadelphia—Wissahickon (Me.) (Re.). *Bucks*—Bristol, *Mart.* (B. C.), Penn Valley (Wn.). *Delaware*—Media, Middletown (Fu.), Lewis' Mills, Crum Creek (B. Sm.), Concord (W. Tr.). *Chester*—North Valley Hill opposite Thorndale and Paoli (St.). *Lancaster*—Little Britain Twp. (Pr.).

New Jersey—Common in pine-barrens.

New Castle—Frequent.

2. **HYPERICUM** L. ST. JOHN'S-WORT.

Styles 5; large perennials; pods 5-celled.

1. *H. Ascyron*.

Styles 3 (rarely 4).

Tall, leafy shrubs; pods 3-celled.

Flowers 12-16 mm. broad; pods 8-12 mm. long.

2. *H. prolificum*.

Flowers 8-12 mm. broad; pods 4-6 mm. long.

3. *H. densiflorum*.

Herbaceous, sometimes woody at the base.

Stamens numerous (15-40); flowers 6-25 mm. broad.

Capsules 1-celled or incompletely 3-4-celled.

Capsules incompletely 3-4-celled by the projecting placentæ.

4. *H. adpressum*.

Capsules strictly 1-celled; placentæ parietal.

Styles united into a beak, separate above; stigmas minute.

5. *H. ellipticum*.

Styles separate; stigmas capitate; cyme naked.

6. *H. virgatum*.

Capsules completely 3-celled; styles separate.

Leaves linear or oblong; sepals lanceolate.

7. *H. perforatum*.

Leaves broadly oblong, oval, or ovate-lanceolate.

8. *H. maculatum*.

Stamens few (5-12); flowers 1-6 mm. broad.

Leaves obtuse; sepals linear-oblong, acutish or obtuse.

9. *H. mutilum*.

Leaves acute, or only the lower, obtuse; sepals long-acuminate;

10. *H. gymnanthum*.

Leaves linear, obtuse, 3-nerved.

11. *H. Canadense*.

1. *HYPERICUM ASCYRON* L. *Great St. John's-wort*. M. p. 626. Banks of streams. Summer.
Bucks—Narrowsville, Durham (Fr.). *Lancaster*—York Furnace (He.), above Peach Bottom (Pr.) (W. Tr.), Peter's Creek (Pr.), Paradise and along Susquehanna (St.), below Safe Harbor, Columbia (Wn.). *Lehigh*—Along the Lehigh (Kr.). *Northampton*—Above Bethlehem (Pr.). *Dauphin*—(P.).
Burlington—Near Bordentown (C.). *Mercer*—Trenton and Lambertville (C.). *Hunterdon*—Bull's Island, Tumble Station, Stockton (C.), Raven Rock (Ws.), below Holland Station (Wn.).
2. *HYPERICUM PROLIFICUM* L. *Shrubby St. John's-wort*. M. p. 626. Sandy or rocky soil. Summer.
Philadelphia—Wissahickon (Je.). *Lancaster*—York Furnace, Turkey Hill (Le.), Fites' Eddy (St.).
3. *HYPERICUM DENSIFLORUM* Pursh. M. p. 626. Pine-barrens. Summer.
New Jersey—Frequent.
4. *HYPERICUM ADPRESSUM* Bart. M. p. 626. Moist places. Summer.
Bucks—Bristol (Ca.) (Fr.), Tullytown (Cr.) (Le.). *Delaware*—(P.). *Lancaster*—Peach Bottom (Pr.). *Lehigh*—Along the Lehigh, Lowland, Coplay (Kr.).
Burlington—Near Burlington (C.), near Moorestown (Sts.). *Camden*—Atco (Gi.). *Cape May*—Cold Spring (Br.). *Atlantic*—May's Landing (Li.), Egg Harbor (Pe.). *Monmouth*—Freehold (C.).
New Castle—Townsend, Canby and Tatnall.
5. *HYPERICUM ELLIPTICUM* Hook. M. p. 627. Swamps and along streams. Summer.
Bucks—(P.). *Montgomery*—Shannonville (Cr.). *Lancaster*—Tucquan (Ca.), Columbia (Ca.) (Pr.). *Berks*—Monocacy, Mart. (B. C.). *Lehigh*—Along the Lehigh (Kr.). *Northampton*—Bethlehem, Porter (Fu.). *Dauphin*—Harrisburg (Wn.).
Burlington—Burlington (C.). *Camden*—Camden (C.). *Atlantic*—Egg Harbor (He.), May's Landing (Li.). *Ocean*—Point Pleasant (Br.). *Hunterdon*—Stockton (C.).
New Castle—River shore near Holly Oak, Canby.
6. *HYPERICUM VIRGATUM* Lam. M. p. 627. Low grounds. Summer.
Bucks—Bristol, Mart. (B. C.). *Cumberland*—Main Road Station (C.). *Burlington*—Atsion, Quaker Bridge (Pr.) (Te.). *Cape May*—Cape May (Cr.), Anglesea (Ke.). *Atlantic*—Hammonton (Cr.), Egg Harbor, Pleasant Mills (C.). *Ocean*—Point Pleasant (Br.). *Monmouth*—Spring Lake (Wn.).
7. *HYPERICUM PERFORATUM* L. *Common St. John's-wort*. M. p. 627. Fields and waste places. Summer.
8. *HYPERICUM MACULATUM* Walt. M. p. 627. Moist soil. Summer.
9. *HYPERICUM MUTILUM* L. M. p. 628. Low grounds. Summer.
10. *HYPERICUM GYMANTHUM* Engelm. & Gray. M. p. 628. Low grounds. Summer.
Bucks—Bristol, I. Martindale (Fr.). *Delaware*—Tinicum (P.).

Burlington—Medford (Br.). *Gloucester*—Near Mickleton, Dr. J. B. Brinton (He.).

New Castle—Townsend, Canby and Tatnall.

11. *HYPERICUM CANADENSE* L. M. p. 628. Wet, sandy soil. Summer.

3. *SAROTHTA* L.

1. *SAROTHTA GENTIANOIDES* L. *Orange-grass*, *Pine-weed*. M. p. 628. Dry, sandy soil. Summer.

4. *TRIADENUM* Raf. MARSH ST. JOHN'S-WORT.

Leaves sessile; flower-clusters peduncled. 1. *T. Virginicum*.
Leaves short-petioled; flower-clusters nearly sessile. 2. *T. petiolatum*.

1. *TRIADENUM VIRGINICUM* (L.) Raf. M. p. 629. Swamps. Summer.
2. *TRIADENUM PETIOLATUM* (Walt.) Britton. M. p. 629. Swamps. Summer.

Philadelphia—Bartram's Garden (P.).

Camden—Camden (C.).

New Castle—St. George's, Canby.

Family 3. *ELATINACEAE* Lindl. Water-wort Family.

1. *ELATINE* L.

1. *ELATINE AMERICANA* (Pursh.) Arn. *Water-wort*. M. p. 629. Margins of ponds and streams. Summer.

Philadelphia—Philadelphia (Ca.). *Bucks*—Andalusia, shore of Delaware, Mart. (B. C.). *Delaware*—Tinicum near Ice-house, A. H. Smith (Fu.).

Camden—Delaware River in tidal mud (C.). *Gloucester*—Wenonah (Gi.). *Ocean*—Terrago Pond (C.).

New Castle—Muddy shores of Brandywine Creek.

Family 4. *CISTACEAE* Lindl. Rock Rose Family.

Petals 5, yellow, fugacious, or wanting.

Leaves broad, lanceolate, or oblong.

Leaves subulate or scale-like, imbricated; style long. 1. *Helianthemum*.

Petals 3, not yellow, persistent; flowers minute; style none. 2. *Hudsonia*.

3. *Lechea*.

1. *HELIANTHEMUM* Pers. FROST-WEED.

Petaliferous flowers 5-12, in terminal clusters.

Petaliferous flowers solitary or rarely 2.

1. *H. majus*.

2. *H. Canadense*.

1. *HELIANTHEMUM MAJUS* (L.) B. S. P. M. p. 630. Dry soil. Early summer.

Bucks—(P.). *Montgomery*—(P.).

2. *HELIANTHEMUM CANADENSE* (L.) Michx. M. p. 631. Sandy or gravelly dry soil. Early summer.

2. *HUDSONIA* L.

Flowers slender-pedicelled; leaves subulate.

Flowers nearly sessile; leaves scale-like.

1. *H. ericoides*.

2. *H. tomentosa*.

1. HUDSONIA ERICOIDES L. M. p. 631. Dry, sandy soil. Spring.
New Jersey—Common in the pine-barrens.
2. HUDSONIA TOMENTOSA Nutt. M. p. 631. Sandy shores. Early summer.
New Jersey—Common near the coast.

3. LECHEA L. PINWEED.

Leaves of the basal shoots oblong to ovate, not more than three times as long as broad.

- | | |
|---|---------------------------|
| Outer sepals longer than the inner; panicle very leafy. | 1. <i>L. minor</i> . |
| Outer sepals equalling or shorter than the inner. | |
| Pod oblong; pedicels slender, 2-4 mm. long. | 2. <i>L. racemulosa</i> . |
| Pod globose; pedicels about 1 mm. long. | |
| Erect, villous-pubescent. | 3. <i>L. villosa</i> . |
| Ascending, bushy-branched, tomentose-canescens. | |

4. *L. maritima*.

Leaves of the basal shoots lanceolate or linear, usually more than three times as long as broad.

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|---|---------------------------|
| Stem-leaves narrowly linear; inner sepals 1-nerved. | 5. <i>L. tenuifolia</i> . |
| Stem-leaves oblong-linear; inner sepals 3-nerved. | 6. <i>L. Leggettii</i> . |

1. LECHEA MINOR L. M. p. 632. Dry, sterile ground. Late summer.
2. LECHEA RACEMULOSA Michx. M. p. 632. Dry and rocky soil. Summer.
3. LECHEA VILLOSA Ell. M. p. 632. Dry soil. Summer.
4. LECHEA MARITIMA Leggett. M. p. 632. Sandy soil near the coast.
Summer.
5. LECHEA TENUIFOLIA Michx. M. p. 632. Dry, open places. Summer.
Monmouth—Phalanx (C.).
6. LECHEA LEGGETTII Britt. & Holl. M. p. 633. Dry, open places. Summer.

Family 6. VIOLACEAE DC. Violet Family.

- | | |
|---------------------------------------|----------------------|
| Sepals more or less auricled at base. | 1. <i>Viola</i> . |
| Sepals not auricled at base. | 2. <i>Cubelium</i> . |

1. VIOLA L. VIOLET.

Acaulescent; flowers scapose.

Plants not stoloniferous.

Leaves mostly lobed or parted (except in one variety of *V. palmata*).

Petals bearded; cleistogamous flowers produced freely.

Plants always more or less pubescent. 1. *V. palmata*.

Plants comparatively glabrous, or with only slight pubescence. 2. *V. Brittoniana*.

Petals not bearded; cleistogamous flowers wanting.

3. *V. pedata*.

Leaves merely crenate or dentate, or incised at base, none lobed.

Woodland species; peduncles of the cleistogamous flowers horizontal or decumbent.

Leaves very thin, cordate-ovate, attenuate at apex; petals pale lilac. 4. *V. affinis*.

Leaves thick, from ovate to reniform, obtuse or merely acute at apex.

Petals dark violet-purple, narrow, the upper reflexed; leaves glabrous. 5. *V. papilionacea*.

Petals reddish-purple, nearly orbicular; leaves hispid-pubescent above. 6. *V. villosa*.

- Meadow or swamp species; peduncles of the cleistogamous flowers erect. 7. *V. cucullata*.
 Leaves lanceolate, oval, or ovate-lanceolate, often incised at base.
 Scapes shorter than the leaves.
 Petals scarcely emarginate; leaf-blades sagittate-lanceolate. 8. *V. sagittata*.
 Petals usually emarginate; leaf-blades ovate or deltoid-triangular. 9. *V. emarginata*.
 Scapes longer than the leaves. 10. *V. fimbriatula*.
 Plants stoloniferous. 11. *V. rotundifolia*.
 Flowers yellow.
 Flowers white.
 Leaves from broadly ovate to orbicular; cleistogenes on deflexed peduncles.
 Upper and lateral petals twice as long as broad; petioles not spotted. 12. *V. blanda*.
 Upper and lateral petals three times as long as broad; petioles usually red-spotted. 13. *V. LeConteana*.
 Leaves from narrowly oval to linear; cleistogenes on erect peduncles.
 Leaf-blades oval to ovate, sometimes pubescent. 14. *V. primulaefolia*.
 Leaf-blades lanceolate or linear-lanceolate, glabrous. 15. *V. lanceolata*.
 Canescent, leafy-stemmed; flowers axillary.
 Flowers yellow.
 Plant pubescent or villous; basal leaves early withering. 16. *V. pubescens*.
 Plant sparsely pubescent or glabrate; basal leaves usually persistent. 17. *V. scabriuscula*.
 Flowers blue, purple, white or cream-colored.
 Stipules entire. 18. *V. Canadensis*.
 Stipules incised or pinnatifid.
 Perennial; stipules much smaller than the blades.
 Petals cream-colored, the lower ones purple-veined. 19. *V. striata*.
 Petals blue or purple, rarely white.
 Spur of the corolla shorter than the petals. 20. *V. Muhlendbergii*.
 Spur of the corolla longer than the petals. 21. *V. rostrata*.
 Annual; stipules nearly as large as the blades. 22. *V. Rafinesquii*.
1. *VIOLA PALMATA* L. M. p. 635. Woodlands. Spring.
 1a. *VIOLA PALMATA DILATATA* Ell. M. p. 635. Range of type.
 1b. *VIOLA PALMATA SORORIA* (Willd.) Pollard. M. p. 635. Range of type.
 1c. *VIOLA PALMATA ANGELAE* (Pollard). Dry woods. Spring.
 Bucks—Argus (Fr.).
 2. *VIOLA BRITTONIANA* Pollard. M. p. 635. Sandy soil near the coast.
 Spring.
 Bucks—Penn Valley (Cr.).
 Burlington—Springdale (St.). Cape May—Cape May, Tuckahoe (St.).
 Ocean—Point Pleasant (Br.). Mercer—Near Trenton (Br.).
 3. *VIOLA PEDATA* L. Bird's-foot Violet. M. p. 636. Dry fields and hill-sides. Spring.
 4. *VIOLA AFFINIS* LeConte. M. p. 636. Rich soil in shade. Spring.

5. *VIOLA PAPILIONACEA* Pursh. M. p. 636. Woodlands and meadows. Spring.
6. *VIOLA VILLOSA* Walt. M. p. 636. Dry woods. Spring.
7. *VIOLA CUCULLATA* Ait. M. p. 637. Bogs and wet meadows. Spring.
8. *VIOLA SAGITTATA* Ait. M. p. 637. Wet meadows. Spring.
9. *VIOLA EMARGINATA* (Nutt.) LeConte. M. p. 637. Fields and edges of woodlands. Spring.
10. *VIOLA FIMBRIATULA* J. E. Smith. M. p. 638. Dry soil. Spring.
11. *VIOLA ROTUNDIFOLIA* Michx. M. p. 638. Cold woods. Early spring.
Philadelphia—Wissahickon, Fairmount Park (Ha.), Shawmont (Sa.).
Bucks—Near Tuckertown (Fr.). *Montgomery*—Rose Glen (Br.). *Delaware*—Swarthmore, Dr. J. B. Brinton (B. C.), Wawa (Le.) (Sa.), near Media (He.) (Mar.), Dismal Run, Middletown (B. Sm.), Chester (W. Tr.). *Lancaster*—Fairfield (Ca.). *Berks*—Hamburg (Li.). *Lehigh*—Salsburg, E. A. Rau (B. C.), Jerusalem Church (Kr.).
Monmouth—Keyport (C.). *Hunterdon*—Rosemont (C.).
New Castle—North Hills, at and above Wooddale, Greenbank, Pike Creek, Ashland, Commons.
12. *VIOLA BLANDA* Willd. *Sweet White Violet*. M. p. 638. Swamps and wet meadows. Spring.
13. *VIOLA LECONTEANA* Don. M. p. 638. Wet, hilly woods. Spring.
Bucks—Nockamixon (He.). *Chester*—French Creek Valley (Mac.).
Delaware—Chad's Ford (B. Sm.).
New Castle—Mount Cuba, Commons; Wooddale.
14. *VIOLA PRIMULAEFOLIA* L. M. p. 639. Moist or wet ground. Spring.
15. *VIOLA LANCEOLATA* L. M. p. 639. Wet meadows and along streams. Spring.
16. *VIOLA PUBESCENS* Ait. M. p. 639. Dry woods. Spring.
17. *VIOLA SCABRIUSCULA* (T. & G.) Schwein. M. p. 639. Moist woods. Spring.
18. *VIOLA CANADENSIS* L. M. p. 639. Rich woods. Early summer.
Philadelphia—Philadelphia, Mart. (B. C.). *Bucks*—Nockamixon.
Chester—West Chester, in a yard long without care (Pr.).
Hunterdon—Riegelsville (Ws.).
19. *VIOLA STRIATA* Ait. M. p. 639. Moist woods and thickets. Spring.
Pennsylvania—Frequent.
Camden—Atco, Dr. J. B. Brinton (B. C.). *Gloucester*—Swedesboro (Li.). *Somerset*—Somerville (C.). *Mercer*—Washington's Crossing and Trenton (C.). *Hunterdon*—Holland, Stockton, Lambertville (C.).
New Castle—Common.
20. *VIOLA MUHLENBERGHII* A. Gray. *Dog Violet*. M. p. 639. Moist soil. Early spring.
21. *VIOLA ROSTRATA* Pursh. M. p. 640. Rocky woods. Early summer.
Bucks—Quakertown, Mart. (B. C.), Argus (Cr.) (Ja.) (Ke.), Rock Hill (Fr.), Nockamixon (He.) (Li.) (Mac.), New Hope (Sta.) (Ws.).
Montgomery—Sumneytown (VP.). *Northampton*—Easton, Porter (B. C.) (Ca.).

Mercer—Trenton (C.). *Somerset*—Liberty Corner (C.). *Hunterdon*—Locktown, Lambertville, Raven Rock (C.).

22. *VIOLA RAFINESQUII* Greene. M. p. 640. Woods and fields. Early spring.

VIOLA ODORATA L. *Sweet-scented Violet*. M. p. 638. Cultivated and escaped. Spring.

VIOLA TRICOLOR L. *Pansy, Heart's-ease*. M. p. 640. Escaped from cultivation. Spring.

2. *CUBELIUM* Raf.

1. *CUBELIUM CONCOLOR* (Forst.) Raf. *Green Violet*. M. p. 640. Moist woods. Spring.

Philadelphia—Byberry, *Mari*. (B. C.), Robinson's Knoll. *Bucks*—(P.). *Montgomery*—Pencoyd (Te.), Green Lane (VP.). *Delaware*—Wawa, Swarthmore, Glenolden (U. C. S.), Concord (W. Tr.). *Chester*—Willistown (Pr.). *Lancaster*—Conestoga, A. A. Heller (B. C.), York Furnace (St.). *Lehigh*—Lehigh Mountain, about 2 acres of it (Kr.). *Northampton*—Bethlehem, E. A. Rau (B. C.).

Hunterdon—Milford, Bull's Island (St.).

New Castle—Mount Cuba, Ashland, Brandywine Creek, Shelpot Creek.

Not rare.

Family 6. **PASSIFLORACEAE** Dumort. **Passion-flower Family.**

1. *PASSIFLORA* L. **PASSION-FLOWER.**

Leaves deeply 3-5-lobed; lobes serrate; petals whitish; corona purple.

1. *P. incarnata*.

Leaves obtusely 3-lobed above the middle, the lobes entire; flower yellowish.

2. *P. lutea*.

1. *PASSIFLORA INCARNATA* L. M. p. 641. Cultivated. Early summer.

Delaware—Media, naturalized, *Dr. Geo. Smith* (Fu.).

2. *PASSIFLORA LUTEA* L. M. p. 641. Thickets. Early summer.

Lancaster—Safe Harbor (Pr.), island opposite Whittaker's (Br.).

Order 20. **OPUNTIALES.**

Family 1. **CACTACEAE** Lindl. **Cactus Family.**

1. *OPUNTIA* Mill.

1. *OPUNTIA OPUNTIA* (L.) Coult. *Prickly Pear, Indian Fig*. M. p. 644.

Sandy fields and dry rocks. Summer.

Philadelphia—Wissahickon above Thorp's Lane (VP.). *Lancaster*—Island at Peach Bottom (Ca.).

New Jersey—Common.

Order 21. **THYMELEALES.**

Leaves green; seed pendulous.

Leaves silvery-scurfy; seed erect.

Fam. 1. *Thymeleaceae*.

Fam. 2. *Elaeagnaceae*.

Family 1. **THYMELEACEAE** Reichenb. **Mazereon Family.**1. **DIRCA** L.

1. **DIRCA PALUSTRIS** L. *Leatherwood, Moosewood.* M. p. 646. Damp, rich woods. Spring.

Philadelphia — Bartram's Garden (Pe.). *Bucks* — Near Doylestown (Fr.). *Chester* — (P.). *Lancaster* — (P.). *Berks* — (P.). *Northampton* — (P.).

Gloucester — Near Swedesboro (Li.). *Salem* — Woodstown (He.), Salem (Wa.). *Mercer* — Assanpink Creek (C.).

New Castle — Brandywine Creek, north side above Market Street and above Rockford, Tatnall; Mount Cuba, Canby.

Family 2. **ELAEAGNACEAE** Lindl. **Oleaster Family.**1. **ELAEAGNUS** L.

1. **ELAEAGNUS ARGENTEA** Pursh. *Silver-berry.* M. p. 647. Escaped from cultivation. Summer.

ELAEAGNUS LATIFOLIA L. Escaped from cultivation and naturalized.

Delaware — Upper Darby, Upper Providence (B. Sm.).

Order 22. **MYRTALES.**

Land or marsh plants, or if aquatic, submerged leaves not dissected.

Calyx-tube merely enclosing the ovary, but free from it, except at the base.

Anthers longitudinally dehiscent.

Fam. 1. *Lythraceae.*

Anthers opening by terminal pores.

Fam. 2. *Melastomaceae.*

Calyx-tube almost wholly adnate to the ovary.

Fam. 3. *Onagraceae.*

Aquatic or amphibious herbs, the submerged leaves dissected.

Fam. 4. *Haloragidaceae.*

Family 1. **LYTHRACEAE** Lindl. **Loosestrife Family.**

Calyx-tube campanulate or hemispheric; flowers regular.

Flowers small, axillary, solitary or few; low herbs.

1. *Rotala.*

Flowers large, in axillary cymes; large aquatic shrubs.

2. *Decodon.*

Calyx-tube cylindric; flowers regular.

3. *Lythrum.*

Calyx-tube tubular, oblique; flowers irregular.

4. *Parsonsia.*

1. **ROTALA** L.

1. **ROTALA RAMOSIOR** (L.) Koehne. M. p. 649. Swamps. Summer.

Delaware — Tinicum, Dr. Geo. Smith (Fu.) (B. Sm.). *Chester* — (P.). *Lancaster* — Columbia (Wn.).

Burlington — Burlington (C.). *Salem* — Sharptown (Wn.). *Cape May* — Woodbine (Br.).

New Castle — Wilmington (Pr.), Barley Mill Dam, etc. Frequent.

2. **DECODON** J. F. Gmel.

1. **DECODON VERTICILLATUS** (L.) Ell. *Swamp Loosestrife.* M. p. 649. Swampy grounds. Summer.

Bucks — Penn Valley (Fr.). *Delaware* — Valley of Darby Creek (B.

Sm.). *Lancaster*—York Furnace (U. C. S.). *Berks*—(P.). *Northampton*—(P.). *Dauphin*—(P.).
New Jersey—Common.

3. LYTHRUM L. LOOSESTRIFE.

Flowers axillary, solitary; stamens not more numerous than the petals.
 Leaves obtuse; stamens all included; annual. 1. *L. Hyssopifolia*.
 Leaves acute; stamens of short-styled flowers exserted; perennial.
 2. *L. alatum*.
 Flowers in paniced spikes, terminal; stamens twice as many as the petals.
 3. *L. Salicaria*.

1. LYTHRUM HYSSOPIFOLIA L. M. p. 649. Borders of salt marshes. Summer.
Bucks—Plumstead (Fr.).
2. LYTHRUM ALATUM Pursh. M. p. 650. Low grounds. Summer.
Delaware—Hay Island (B. Sm.), Tinicum (VP.).
Gloucester—Williamstown (He.). *Mercer*—Pennington (C.).
3. LYTHRUM SALICARIA L. M. p. 650. Wet meadows. Summer.
Philadelphia—Cobb's Creek and Haverford Road (Mac.). *Bucks*—Narrowsville (Ja.).
Chester—Near West Chester (Fu.). *Northampton*—(P.).
Camden—Camden (He.), Kaighn's Point (Te.) (Wn.). *Gloucester*—Swedesboro (Li.). *Atlantic*—Egg Harbor (Sts.). *Hunterdon*—Tumble Station and Bull Island (C.).
New Castle—River shore, Canby.

4. PARSONSIA P. Br.

1. PARSONSIA PETIOLATA (L.) Rusby. *Clammy Cuphea*. M. p. 650. Dry soil. Summer and fall.

Family 2. MELASTOMACEAE R. Br. Meadow-beauty Family.

1. RHEXIA L. MEADOW-BEAUTY.

Stem cylindric, very pubescent. 1. *R. Mariana*.
 Stem square or angled. 2. *R. Virginica*.
 Stem more or less pubescent; leaves ovate. 3. *R. aristosa*.
 Stem glabrous.

1. RHEXIA MARIANA L. M. p. 651. Swamps. Summer.
Bucks—Bristol, Mart. (B. C.), Penn Valley (Wn.).
New Jersey—Common.
New Castle—Thompson's, Moore's, etc. Frequent.
2. RHEXIA VIRGINICA L. *Deer Grass*. M. p. 651. Sandy swamps. Summer.
3. RHEXIA ARISTOSA Britton. M. p. 651. Sandy swamps. Summer.
Cape May—Woodbine (Br.), Cape May (St.). *Atlantic*—Egg Harbor.

Family 3. ONAGRACEAE Dumort. Evening-primrose Family.

Floral whorls of 4 parts or more.
 Fruit a many-seeded capsule, opening by valves or a pore.
 Calyx-tube not prolonged beyond the ovary.

Seeds naked.

Stamens 4, in one row.

Leaves opposite; stems creeping or floating.

1. *Isnardia*.

Leaves alternate; stems erect or ascending.

2. *Ludwigia*.

Stamens 8-12, in 2 rows.

3. *Jussiaea*.

Seeds furnished with a tuft of silky hairs.

4. *Chamaenerion*.

Calyx-tube prolonged beyond the ovary.

Seeds furnished with silky hairs.

5. *Epilobium*.

Seeds naked or sometimes tuberculate.

Stamens equal in length.

Ovules and seeds horizontal, inserted in 2 or rarely more rows, prismatic-angled.

6. *Onagra*.

Ovules and seeds ascending, not angled.

7. *Oenothera*.

Stamens unequal in length, the alternate ones longer.

8. *Kneiffia*.

Fruit indehiscent, nut-like.

9. *Gaura*.

Floral whorls of 2 parts.

10. *Circaea*.

1. ISNARDIA L.

1. *ISNARDIA PALUSTRIS* L. *Water Purslane*. M. p. 652. Muddy ditches and swamps. Summer and fall.

2. LUDWIGIA L.

Flowers inconspicuous; petals none, or small, yellowish or greenish; valves of the capsule separating from the terminal disk.

Capsules subglobose or top-shaped.

1. *L. sphaerocarpa*.

Capsules cylindric or obpyramidal.

2. *L. linearis*.

Flowers showy, peduncled; petals large, bright yellow; capsules opening by an apical pore.

Plants hirsute; capsules bristly-pubescent.

3. *L. hirtella*.

Plants glabrous or nearly so; capsules glabrous.

4. *L. alternifolia*.

1. *LUDWIGIA SPHAEROCARPA* Ell. M. p. 653. Swamps. Summer.

Bucks—Bristol (Fr.).

Burlington—Atsion. *Gloucester*—Near Mickleton Junction (He.).

Salem—Manington (C.), Cumberland, Millville (Je.) (Re.). *Atlantic*—

Hammonton (Cr.) (Ke.) (Pr.), Egg Harbor (Ja.), May's Landing (Le.).

Cape May—Woodbine (Br.). *Mercer*—Mercerville (VP.).

New Castle—Townsend, Canby and Tatnall.

2. *LUDWIGIA LINEARIS* Walt. M. p. 654. Swamps. Summer.

Burlington—Atsion (Fr.). *Cape May*—Woodbine (St.). *Atlantic*—

Hammonton (Ke.), May's Landing (Li.), Egg Harbor (Wn.).

3. *LUDWIGIA HIRTELLA* Raf. M. p. 654. Moist pine-barrens. Summer.

Burlington—Batsto, Quaker Bridge (C.), Atsion (Fr.). *Atlantic*—

Hammonton, Main Road Station (C.).

4. *LUDWIGIA ALTERNIFOLIA* L. *Seed-box*. M. p. 654. Swamps. Summer.

3. JUSSIAEA L.

1. *JUSSIAEA DIFFUSA* Forskl. M. p. 654. Ponds. Summer.

Camden—Kaighn's Point, Mart. and I. Burk (Fu.).

4. CHAMAENERION Adans.

1. CHAMAENERION ANGUSTIFOLIUM (L.) Scop. *Great Willow-herb, Fire-weed.*
M. p. 655. Dry soil. Summer.

5. EPILOBIUM L. WILLOW-HERB.

Leaves linear or lanceolate, entire or nearly so.

Plants crisp-pubescent or canescent.

Plants glandular-pubescent throughout or only above.

1. *E. lineare.*

2. *E. strictum.*

Leaves lanceolate or ovate, serrate.

Seeds obconic, beakless; coma reddish.

3. *E. coloratum.*

Seeds ellipsoid, short-beaked; coma white.

4. *E. adenocaulon.*

1. EPILOBIUM LINEARE Muhl. M. p. 656. Swamps. Summer.
Bucks—Springfield Twp. (Fr.). *Lancaster*—Peach Bottom (Ca.),
Little Britain Twp. (Pr.).
Cape May—Cape May (Ja.).
New Castle—Thompson's, Hand's. Rare.
2. EPILOBIUM STRICTUM Muhl. M. p. 656. Bogs. Summer.
Delaware—(P.). *Lancaster*—Near Lancaster (Ca.).
Burlington—Pemberton (C.). *Cape May*—Sea Isle City (Li.).
3. EPILOBIUM COLORATUM Muhl. M. p. 656. Wet places. Summer.
4. EPILOBIUM ADENOCaulON Haussk. M. p. 656. Wet places. Summer.
Delaware—Tinicum (B. Sm.). *Northampton*—Pen Argyl (He.) (Ja.).
New Castle—Jackson and Sharpe's lumber yard.
- EPILOBIUM PARVIFLORUM Scheetz. Ballast.
Philadelphia—Philadelphia, C. A. Boice (B. C.).

6. ONAGRA L.

1. ONAGRA BIENNIS (L.) Scop. *Common Evening Primrose.* M. p. 657.
Dry soil. Summer and fall.

7. OENOTHERA L. EVENING PRIMROSE.

Silvery-pubescent with appressed or ascending hairs; seeds striate.

1. *O. humifusa.*

Glabrous or sparingly hirsute-pubescent; seeds pitted.

2. *O. laciniata.*

1. OENOTHERA HUMIFUSA Nutt. M. p. 658. Sea-beaches. Summer.
Cape May—Wildwood, Anglesea, Cape May, Ocean City (He.). *Ocean*
—Seaside Park (Ha.).
2. OENOTHERA LACINIATA Hill. M. p. 658. Sandy, dry soil. Early summer.
Philadelphia—Chestnut Hill (Je.). *Bucks*—(P.). *Chester*—Coates-
ville, H. E. Stone (B. C.).
New Jersey—Common.
New Castle—Townsend, Canby.

8. KNEIFFIA Spach. SUNDROPS.

Capsules club-shaped.

Pedicels and capsules pubescent.

Pedicle longer than the body of the capsule, the wings thick and
pubescent.

1. *K. longipedicellata.*

- Pedicle shorter than the body of the capsule, the wings thin and glabrous. 2. *K. linearis*.
 Pedicels and capsules glabrous or glabrate. 3. *K. pumila*.
 Capsules oblong or nearly so. 4. *K. fruticosa*.

1. *KNEIFFIA LONGIPEDICELLATA* Small. M. p. 659. In fields and thickets.
Bucks—Tullytown (P.). *Delaware*—Tinicum (B. Sm.).
New Jersey—Frequent.
2. *KNEIFFIA LINEARIS* (Michx.) Spach. M. p. 660. Dry soil. Summer.
Montgomery—(P.). *Delaware*—Darby, H. C. Barker (B. C.), Lansdowne (Pe.). *Lancaster*—(P.).
Burlington—Quaker Bridge, Pemberton (C.). *Gloucester*—Mickleton (C.), Washington Park (Ja.), Swedesboro (Li.). *Salem*—Canton (C.).
Cape May—Whale Beach (Ab.). *Atlantic*—Absecon (C.). *Monmouth*—Deal (C.).
New Castle—Townsend, Canby.
3. *KNEIFFIA PUMILA* (L.) Spach. M. p. 660. Dry soil. Summer.
4. *KNEIFFIA FRUTICOSA* (L.) Raimann. *Common Sundrops*. M. p. 660.
 Dry soil. Summer.

9. GAURA L.

1. *GAURA BIENNIS* L. M. p. 663. Dry banks. Summer.

10. CIRCAEA L. ENCHANTER'S NIGHTSHADE.

- Fruit 2-celled; leaves mainly of an ovate type. 1. *C. Lutetiana*.
 Fruit 1-celled; leaves mainly of a cordate type. 2. *C. alpina*.

1. *CIRCAEA LUTETIANA* L. M. p. 664. Woods. Summer.
2. *CIRCAEA ALPINA* L. M. p. 664. Cold, moist woods. Summer.
Lehigh—Lehigh Mountain (Kr.). *Northampton*—Pen Argyl (He.), (Ja.).

Family 4 HALORAGIDACEAE Kl. & Garcke. Water-milfoil Family.

- Fruit 3-angled or 4-angled. 1. *Proserpinaca*.
 Fruit of 4 carpels. 2. *Myriophyllum*.

1. PROSERPINACA L. MERMAID-WEED.

- Emerald leaves linear-lanceolate to oblong, serrate; fruit sharp-angled. 1. *P. palustris*.
 Leaves all pectinate-pinnatifid; fruit obtusely angled. 2. *P. pectinata*.
1. *PROSERPINACA PALUSTRIS* L. M. p. 665. Swamps. Summer.
Bucks—Bristol, Mart. (B. C.), Argus, Sellersville (Fr.). *Northampton*—(P.). *Dauphin*—(P.).
New Jersey—Common.
New Castle—Col. Andrews', Pencader Hd. and elsewhere. Not rare.
 2. *PROSERPINACA PECTINATA* Lam. M. p. 665. Sandy swamps. Summer.
Lancaster—(P.).
New Jersey—Common near the coast,
New Castle—Lower Hundreds, Commons.

2. MYRIOPHYLLUM L. WATER-MILFOIL.

Carpels smooth.

Flowers in emerged spikes.

Floral leaves longer than the flowers, pinnatifid.

1. *M. verticillatum*.

Floral leaves reduced to minute bracts.

2. *M. tenellum*.

Flowers on both emerged and submersed stems.

3. *M. humile*.

Carpels rough or tuberculate.

Floral leaves ovate or lanceolate, serrate.

4. *M. heterophyllum*.

Floral leaves linear, pectinate.

5. *M. pinnatum*.

1. MYRIOPHYLLUM VERTICILLATUM L. M. p. 666.

Bucks—(P.).

2. MYRIOPHYLLUM TENELLUM Bigel. M. p. 666. Borders of ponds. Summer.

Ocean—Point Pleasant (Br.) (St.). Monmouth—Spring Lake (Wn.).

3. MYRIOPHYLLUM HUMILE (Raf.) Morong. M. p. 666. Ponds and ditches. Summer.

Lancaster—York Furnace (He.).

Burlington—Pemberton (C.). Camden—Camden, Mart. (B. C.), Clementon (Ja.) (U. C. S.). Gloucester—Westville, I. Burk (He.). Salem—Riddleton (Li.). Cape May—Wildwood (He.). Monmouth—Deal, A. H. Smith (Fu.), Freehold, Keyport (C.).

4. MYRIOPHYLLUM HETEROPHYLLUM Michx. M. p. 666. Ponds. Summer.

Bucks—Near Quakertown (Fr.).

Atlantic—Hammonton (C.).

New Castle—Canal Coves, etc.; Delaware City, Commons and Tatnall.

5. MYRIOPHYLLUM PINNATUM (Walt.) B. S. P. M. p. 666. Shallow ponds. Summer.

Gloucester—Swedesboro (Li.), Westville (Wn.). Salem—Riddleton (He.) (Le.). Cape May—Cape May (He.), Wildwood (Li.). Monmouth—Freehold (C.).

New Castle—Delaware City, Tatnall; Collins, Commons.

Order 23. UMBELLALES.

Stamens 5; styles 2-5, rarely united; flowers umbellate, capitate or panicle.

Fruit a fleshy berry or drupe.

Fam. 1. *Araliaceae*.

Fruit dry when mature, splitting into two mericarps.

Fam. 2. *Umbelliferae*.

Stamens 4; style 1; stigma 1; shrubs and trees; flowers not umbellate.

Fam. 3. *Cornaceae*.

Family 1. ARALIACEAE Vent. Ginseng Family.

Herbs, shrubs, or trees; leaves alternate; decomposed; styles 5. 1. *Aralia*.

Herbs; leaves verticillate, digitately compound; styles 2 or 3. 2. *Panax*.

1. ARALIA L.

Umbels numerous, panicle or racemose.

Spiny shrub or tree; leaflets thick, ovate.

1. *A. spinosa*.

Branching unarmed herb; leaflets thin, large, cordate.

2. *A. racemosa*.

Umbels 2-several, sometimes numerous, terminal or corymbose.

Plant glabrate; leaf and peduncle arising from the rootstock.

Plant bristly or hispid; stem leafy, erect.

3. *A. nudicaulis*.

4. *A. hispida*.

1. *ARALIA SPINOSA* L. *Angelica-tree*, *Hercules Club*. M. p. 668. River-banks. Summer.

Philadelphia—Byberry, *Mart.* (B. C.), West Philadelphia (Ha.) (Mac.) (Te.), Wissahickon (Me.), Bartram's Garden (Pe.). *Bucks*—(P.). *Delaware*—Middletown (Fu.), Valley of Darby Creek (B. Sm.), Aston (W. Tr.). *Chester*—(P.). *Lancaster*—(P.). *Lehigh*—Lehigh (Sch.). *Camden*—Ancora (Li.). *Gloucester*—Near Mantua, escaped (He.). *Monmouth*—Keyport (C.).

New Castle—Roadsides, J. Shipley's, *Tatnall*; Cedar Swamps, *Commons*; near Clayton. Not common.

2. *ARALIA RACEMOSA* L. *Spikenard*. M. p. 668. Rich woodlands. Summer.

3. *ARALIA NUDICAULIS* L. *Wild Sarsaparilla*. M. p. 668. Woodlands. Spring.

4. *ARALIA HISPIDA* Vent. *Bristly Sarsaparilla*. M. p. 668. Rocky and sandy places. Summer.

Montgomery—Hillside north of Frazier's Bog, Willow Grove (VP.). *Chester*—(P.). *Lancaster*—Banks of Susquehanna (W. Tr.). *Berks*—Hamburg. *Dauphin*—(P.).

Monmouth—Asbury Park (Wn.). *Hunterdon*—Stockton (C.).

2. PANAX L.

Leaflets 5, ovate or obovate, stalked, acuminate.

1. *P. quinquefolium*.

Leaflets 3-5, oval to oblanceolate, sessile, obtuse.

2. *P. trifolium*.

1. *PANAX QUINQUEFOLIUM* L. *Ginseng*. M. p. 668. Rich woods. Summer.

Bucks—Nockamixon (Fr.), Solebury Twp. (Ws.). *Delaware*—Middletown (Fu.), Wawa, Lima (Ja.), Concord (W. Tr.). *Lancaster*—Peach Bottom (Ca.), York Furnace (Cr.). *Lehigh*—Lehigh Mountain (Kr.). *Northampton*—(P.).

New Castle—General but scarce.

2. *PANAX TRIFOLIUM* L. *Dwarf Ginseng*, *Ground-nut*. M. p. 668. Moist woods. Spring.

Family 2. UMBELLIFERAE B. Juss. Carrot or Parsley Family.

Leaves simple, undivided, sometimes slightly lobed.

Leaves narrow, mostly spiny-toothed; flowers in dense heads.

Leaves ovate and perfoliolate; flowers yellow.

3. *Eryngium*.

Leaves orbicular or ovate, slender-petioled, often peltate.

8. *Bupleurum*.

1. *Hydrocotyle*.

Leaves, or some of them, pinnate, ternate, digitate, decomposed or deeply lobed.

Flowers in sessile or short-stalked, capitate clusters opposite the leaves.

6. *Torilis*.

Flowers in simple umbels; leaves pedately lobed.

1. *Hydrocotyle*.

Flowers in more or less compound umbels.

Flowers white, greenish or pink.

Fruit, or its beak, bristly, papillose or tuberculate.

Leaves digitately 3-7-parted or lobed. 2. *Sanicula*.

Leaves pinnately or ternately decompound or dissected.

Fruit linear, ribbed, long-attenuate at the base.

5. *Washingtonia*.

Fruit with 4 strong, bristly wings.

25. *Daucus*.

Fruit smooth, ribbed or winged, rarely pubescent.

Fruit winged, at least on the lateral ribs, dorsally flattened.

Leaves simply ternate or pinnate. 22. *Oxypolis*.

Leaves ternately or pinnately compound; segments broad.

Segments ovate or oval, not cordate.

21. *Angelica*.

Segments large; cordate, pubescent.

24. *Heracleum*.

Fruit winged or wingless, not flattened either dorsally or laterally.

18. *Aethusa*.

Fruit laterally flattened.

Fruit linear or linear-oblong.

Leaves 3-foliolate.

11. *Deringa*.

Leaves decompound or finely dissected.

4. *Chaerophyllum*.

Fruit ovoid or oval.

Leaves finely dissected into filiform segments.

Ribs of the fruit equal, prominent.

17. *Ptilimnium*.

Ribs filiform, inconspicuous.

12. *Carum*.

Leaves pinnate or decompound; segments linear to ovate-oblong.

Oil-tubes of the fruit none.

Leaves biternate with broad segments.

15. *Aegopodium*.

Leaves decompound into small, pinnatifid segments.

7. *Conium*.

Oil-tubes solitary between the ribs; leaves pinnate.

10. *Cicuta*.

Oil-tubes numerous.

Tall, native marsh perennials.

16. *Sium*.

Introduced plant of dry ground.

14. *Pimpinella*.

Flowers yellow or purple.

Fruit dorsally flattened.

23. *Pastinaca*.

Fruit not flattened; ribs, or some of them, winged.

20. *Thaspium*.

Fruit laterally flattened; leaves decompound (except *Zizia*).

Leaf-segments oval or ovate, entire.

13. *Taenidia*.

Leaf-segments crenate, lobed or incised.

Leaf-segments broad, crenate or dentate.

9. *Zizia*.

Leaf-segments filiform; fruit prominently ribbed.

19. *Foeniculum*.

1. HYDROCOTYLE L. WATER PENNYWORT.

Leaves nearly orbicular, peltate.

Umbels simple, rarely proliferous; pedicels slender.

1. *H. umbellata*.

Umbels, at least some of them, proliferous; pedicels, or some of them, short.

Fruit notched at each end.

2. *H. Canbyi*.

Fruit not notched at either end.

3. *H. verticillata*.

Leaves nearly orbicular, cordate, or reniform, not peltate.

Leaves 5-13-lobed; umbels nearly sessile.

4. *H. Americana*.

Leaves 3-7-cleft; umbels long-peduncled.

5. *H. ranunculoides*.

1. *HYDROCOTYLE UMBELLATA* L. M. p. 671. Swamps and low grounds. Summer.

2. *HYDROCOTYLE CANBYI* C. & R. M. p. 671. Moist ground. Summer.

Bucks—Neshaminy Creek near Doylestown (Br.).

Cumberland—Low grounds near Delaware Bay (C.). *Cape May*—Cape May (Ja.).

New Castle—Collins' Beach, Commons.

3. *HYDROCOTYLE VERTICILLATA* Thunb. M. p. 671. Moist soil. Summer.

Cape May—Cape May (Cr.), Wildwood (He.) (Li.). *Monmouth*—Redbank (C.), Deal, Dr. Geo. Smith (Fu.).

4. *HYDROCOTYLE AMERICANA* L. M. p. 672. Wet places. Summer.

5. *HYDROCOTYLE RANUNCULOIDES* L. f. M. p. 672. Ponds and swamps. Summer.

Chester—(P.). *Lancaster*—York Furnace (Cr.) (He.) (Li.), Peach Bottom (Pr.). *Dauphin*—(P.).

2. *SANICULA* L. SNAKE-ROOT.

Perennial; some staminate flowers in separate heads; styles longer than the bristles.

Petals and anthers greenish-white; calyx-segments lanceolate, cuspidate; fruit 6 mm. long.

1. *S. Marylandica*.

Petals and anthers yellow; calyx-lobes ovate, obtuse; fruit 3 mm. long or less.

2. *S. gregaria*.

Biennial; staminate flowers never in separate heads; styles shorter than the bristles.

Leaves 3-5-divided; pedicels of staminate flowers 2 mm. long; fruit less than 4 mm. long.

3. *S. Canadensis*.

Leaves 3-foliolate; pedicels of staminate flowers 4 mm. long; fruit 6 mm. long or more.

4. *S. trifoliata*.

1. *SANICULA MARYLANDICA* L. *Sanicle*, Black Snake-root. M. p. 672. Rich woods. Early summer.

2. *SANICULA GREGARIA* Bicknell. M. p. 673. Woods and thickets. Spring.

3. *SANICULA CANADENSIS* L. M. p. 673. Woodlands. Summer.

4. *SANICULA TRIFOLIATA* Bicknell. M. p. 673. Hilly woods. Early summer.

3. *ERYNGIUM* L. ERYNGO.

Leaves elongated-linear, parallel-veined.

1. *E. aquaticum*.

Leaves elongated-linear, reticulate-veined.

2. *E. Virginianum*.

1. *ERYNGIUM AQUATICUM* L. *Rattlesnake-Master*. M. p. 673. Wet soil. Summer.

Burlington—Between Atsion and Quaker Bridge (C.).

2. *ERYNGIUM VIRGINIANUM* Lam. *Eryngo*. M. p. 673. Marshes along the coast. Summer.

- Bucks*—Bristol (P.). *Delaware*—Tinicum (P.).
New Jersey—Common along the coast. *Camden*—Camden, *Mar.* (B. Q.).
Gloucester—Center Square (He.), near Swedesboro (Ld.).
New Castle—Swamps, river shore, Holly Oak. Frequent.

4. CHAEROPHYLLUM L.

1. CHAEROPHYLLUM PROCUMBENS (L.) Crantz. *Chervil*. M. p. 674. Moist ground. Spring.

Philadelphia—Wissahickon, River Road near Belmont (Je.), Schuylkill above Philadelphia (Pr.), Ormiston, Fairmount Park (VP.). *Bucks*—Near Point Pleasant (Fr.), Nockamixon (Le.) (Mac.). *Montgomery*—Paskiomen (Cr.), Ivy Rock (Ke.), Arcola (Mar.). *Delaware*—Chad's Ford (B. Sm.). *Chester*—(P.). *Lancaster*—(P.). *Lehigh*—Salisbury (Kr.). *Northampton*—(P.). *Dauphin*—Steelton (Wn.).
Camden—Banks of Delaware below Gloucester (Wn.). *Mercer*—Trenton and northward (C.).

New Castle—General and frequent.

5. WASHINGTONIA Raf. SWEET CICELY.

Pubescent; style and stylopodium 1 mm. long or less. 1. *W. Claytoni*.
 Glabrate; style and stylopodium 2 mm. long. 2. *W. longistylis*.

1. WASHINGTONIA CLAYTONI (Michx.) Britton. M. p. 675. Woods. Spring.
 2. WASHINGTONIA LONGISTYLIS (Torr.) Britton. M. p. 675. Woods. Spring.

6. TORILIS Adans.

1. TORILIS ANTHRISCUS (L.) Gmel. *Hedge-parsley*. M. p. 675. Waste places. Summer.
Camden—Kaighn's Point (Ja.). *Cape May*—Wildwood, Angelsea.

7. CONIUM L.

1. CONIUM MACULATUM L. *Poison Hemlock*. M. p. 676. Waste places. Summer.

Bucks—Near Point Pleasant (Fr.), New Hope (Wa.). *Montgomery*—Spring Mill (Je.). *Chester*—(P.). *Lancaster*—(P.). *Northampton*—Easton (Ca.), Wind Gap (He.) (Li.).

Burlington—Pemberton (C.). *Camden*—Ballast (C.). *Hunterdon*—Bull's Island (C.).

New Castle—18th Street near Wooddale Avenue. Not common.

8. BUPLEURUM L.

1. BUPLEURUM ROTUNDFOLIUM L. *Thorough-wax*. M. p. 677. Cultivated and escaped. Summer.

9. ZIZIA Koch.

Basal leaves 2-3-ternately compound.

Basal leaves cordate, undivided; fruit about 3 mm. long.

1. *Z. aurea*.
 2. *Z. cordata*.

1. ZIZIA AUREA (L.) Koch. *Golden Meadow-parsnip*. M. p. 678. Fields, meadows and swamps. Spring.

Philadelphia—River road near Wissahickon Creek (Je.), Upper Wissahickon (Me.). *Bucks*—Rock Hill (Fr.), Nockamixon (He.). *Chester*—(P.). *Lancaster*—(P.). *Lehigh*—Rockdale (Kr.). *Northampton*—(P.). *Hunterdon*—Rosemont (C.).

2. *ZIZIA CORDATA* (Walt.) DC. *Heart-leaved Alexanders*. M. p. 679. Woods. Spring.

Philadelphia—60th and Lancaster Ave. (Mac.). *Bucks*—Rock Hill (Fr.). *Montgomery*—Shannonville (Cr.), Green Lane (VP.). *Delaware*—Swarthmore (Ws.). *Chester*—Oakbourne (Wn.). *Lancaster*—(P.). *Northampton*—Easton, Porter (B. C.).

Mercer—Trenton (C.). *Middlesex*—Morgan's Station (C.).

New Castle—Mount Cuba (Ja.) (Ke.), Centerville, etc., *Commons*.

10. *CICUTA* L. WATER HEMLOCK.

Leaf-segments lanceolate.

1. *C. maculata*.

Leaf-segments narrowly linear.

2. *C. bulbifera*.

1. *CICUTA MACULATA* L. *Spotted Cowbane, Musquash Root, Beaver Poison*. M. p. 679. Swamps. Summer.

2. *CICUTA BULBIFERA* L. M. p. 679. Swamps. Summer.

Philadelphia—West Schuylkill (Me.). *Bucks*—Andalusia, Mart. (B. C.); Tullytown (Cr.) (Le.), Nockamixon (Fr.). *Lancaster*—Pequea (Ca.), Collins' Ferry (Fr.). *Lehigh*—Rockdale (Kr.). *Dauphin*—Harrisburg, on the canal (Wn.).

Mercer—Princeton Junction (C.). *Hunterdon*—Rosemont (C.).

New Castle—Pivot Bridge and Pencader Hd., *Commons*.

11. *DERINGA* Adans.

1. *DERINGA CANADENSIS* (L.) Kuntze. *Honewort*. M. p. 679. Woods. Summer.

12. *CARUM* L.

1. *CARUM CARUI* L. *Caraway*. M. p. 679. Waste places. Early summer. *Bucks*—Rock Hill, Dr. J. B. Brinton (He.).

13. *TAENIDIA* Drude. YELLOW PIMPERNEL.

1. *TAENIDIA INTEGERRIMA* (L.) Drude. M. p. 680. Rocky hillsides. Spring. *Bucks*—Sellersville (Fr.), Nockamixon (Le.); Neshaminy Creek (Ws.). *Montgomery*—Ivy Rock, Skippack Creek, Sumneytown (VP.). *Delaware*—Radnor (W. Tr.). *Chester*—Phoenixville, Dr. J. B. Brinton (He.), Valley Forge (U. C. S.). *Lancaster*—Columbia (Ws.). *Northampton*—Easton, Porter (B. C.). *Dauphin*—Steelton (Wn.). *Middlesex*—Perth Amboy (C.). *Somerset*—Rocky Hill (C.). *Hunterdon*—Milford, Rosemont (C.).

New Castle—Centerville, Mount Cuba, Tatnall and *Commons*.

14. *PIMPINELLA* L.

1. *PIMPINELLA SAXIFRAGA* L. *Bennet Pimpernel*. M. p. 680. Waste places. Summer and fall.

Delaware—Lansdowne, Dr. Emily G. Hunt (He.). *Northampton*—Easton, Porter (B. C.) (Ca.).

15. AEGOPODIUM L.

1. AEGOPODIUM PODAGRARIA L. *Gout-weed*. M. p. 680. Waste places. Summer.

Philadelphia—Dark Run at Frankford (Cr.), Germantown, common (Me.), Wissahickon (VP.). *Delaware*—Lansdowne, Dr. Emily G. Hunt (He.) (Pe.). *Lancaster*—Bohrerstown, J. K. Small (He.). *Northampton*—Bethlehem (P.).

New Castle—Newark, Commons. Not since found.

16. SIUM L. WATER-PARSNIP.

- Plant stout, 6-18 dm. high; leaf-segments 7-17. 1. *S. oicutasfolium*.
Plant weak, 3-9 dm. high; leaf-segments 3-7. 2. *S. Carsoni*.

1. SIUM CICUTAEFOLIUM Gmel. M. p. 681. Swamps. Summer.

Philadelphia—Thorp's Lane, Chestnut Hill (Je.). *Bucks*—Rock Hill (Fr.), New Hope (Ws.). *Chester*—(P.). *Lancaster*—Columbia (Ca.), Turkey Hill (Le.). *Northampton*—(P.).

Camden—Kaighn's Point (Mac.). *Gloucester*—Mickleton (He.), Swedesboro (Li.), Bridgeport (W. Tr.). *Cape May*—Five-mile Beach (Ja.) (Le.). *Ocean*—Forked River (Le.).

New Castle—Mount Cuba (Cr.), Wilmington, Dr. Michener.

2. SIUM CARSONI Durand. M. p. 681. Streams. Summer.

Bucks—Rock Hill (Fr.).

17. PTILIMNIUM Raf.

1. PTILIMNIUM CAPILLACEUM (Michx.) Raf. *Mock Bishop-weed*. M. p. 681. Wet soil. Summer.

Bucks—Tullytown (P.). *Delaware*—Shore of Delaware, Dr. Geo. Smith (Fu.).

New Jersey—Frequent.

New Castle—Frequent.

18. AETHUSA L.

1. AETHUSA CYNAPIUM L. *Fool's Parsley*. M. p. 682. Waste places. Summer.

Philadelphia—(P.). *Bucks*—Rock Hill (Mac.). *Montgomery*—Shannonville (Cr.). *Delaware*—Chester, Mart. (B. C.), Tinicum (Fu.), Valley of Darby Creek near Burmont, L. L. Smith (B. Sm.) (W. Tr.). *Lehigh*—Rockdale (Kr.). *Northampton*—Pen Argyl (U. C. S.).

Camden—Haddonfield (C.), Kaighn's Point (Ja.). *Gloucester*—Near Woodbury, Jas. B. Livezy (He.).

New Castle—Centerville, Wilmington, and Mount Cuba, Commons.

19. FOENICULUM Adans.

1. FOENICULUM FOENICULUM (L.) Karst. *Fennel*. M. p. 682. Escaped from gardens. Summer.

20. THASPIUM Nutt. MEADOW-PARSNIP.

- Leaves mostly ternate; segments crenate, thickish. 1. *T. trifoliatum*.
Leaves mostly biternate; segments incised or lobed, rather thin. 2. *T. barbinode*.

1. *THASPIUM TRIFOLIATUM* (L.) Britton. M. p. 684. Woods. Early summer.

- 1a. *THASPIUM TRIFOLIATUM AUREUM* (L.) Britton. M. p. 684. Woods. Early summer.

2. *THASPIUM BARBINODE* (Michx.) Nutt. M. p. 684. Banks of streams. Spring.

Philadelphia—Byberry, Mart. (B. C.), Wissahickon (Je.), Sellers' Mill, Cobb's Creek (Te.). *Bucks*—(P.). *Montgomery*—Conshohocken (Cr.). *Delaware*—Lansdowne (Pe.), near Media (B. Sm.), Chester (W. Tr.), Chad's Ford (Wn.). *Chester*—Westtown, Valley Forge (Le.). *Lancaster*—(P.). *Northampton*—Easton (Ca.). *Dauphin*—Harrisburg, Steelton (Wn.).

Camden—Magnolia (Ha.).

New Castle—Frequent.

21. *ANGELICA* L.

Umbels glabrous or nearly so; leaf-segments acute or scutish.

Umbels densely tomentose; leaf-segments obtuse.

1. *A. atropurpurea*.

2. *A. villosa*.

1. *ANGELICA ATROPURPUREA* L. M. p. 685. Swamps and moist ground. Early summer.

Bucks—(P.). *Montgomery*—Shannonville (Cr.). *Delaware*—Media, etc., common (Fu.), Williamson (Pe.), Valley of Darby Creek (B. Sm.). *Chester*—Valley Forge (Ja.). *Lancaster*—(P.). *Berks*—Hamburg (He.) (Li.). *Lehigh*—Coplay (Kr.). *Northampton*—(P.).

Burlington—Moorestown (C.). *Salem*—Salem (C.). *Cumberland*—Vineland (C.).

New Castle—Roseville. Rare.

2. *ANGELICA VILLOSA* (Walt.) B. S. P. M. p. 685. Dry ground. Summer.

22. *OXYPOLIS* Raf.

1. *OXYPOLIS RIGIDUS* (L.) Raf. Cowbane. M. p. 686. Swamps. Late summer.

1. *OXYPOLIS RIGIDUS LONGIFOLIUS* (Pursh.) Britton. M. p. 686. Swamps. Summer.

New Castle—McCrone's and below New Castle, Commons.

23. *PASTINACA* L.

1. *PASTINACA SATIVA* L. Parsnip. M. p. 688. Wet ground. Early summer.

24. *HERACLEUM* L.

1. *HERACLEUM LANATUM* Michx. Cow-parasip. M. p. 688. Wet ground. Early summer.

25. *DAUCUS* L.

1. *DAUCUS CAROTA* L. Wild Carrot. M. p. 688. Fields and waste places. Summer.

AMI VISNAGO Lam. Ballast.

Camden—Kaighn's Point (Ja.).

Family 8. CORNACEAE Link. Dogwood Family.

Flowers perfect, 4-parted; ovary 2-celled.

1. *Cornus*.

Flowers polygamous or dioecious; petals minute or none.

2. *Nyssa*.

1. CORNUS L.

Flowers capitate, with an involucre of 4-6 large white bracts.

Low herbaceous shrubs; rootstocks slender.

1. *C. Canadensis*.

Tree or large shrub; flowers greenish-yellow.

2. *C. florida*.

Flowers cymose, white, not involucre.

Leaves opposite.

Leaves downy-pubescent beneath, at least when young.

Leaves broadly ovate or orbicular.

3. *C. circinata*.

Leaves ovate or ovate-lanceolate.

4. *C. Amomum*.

Leaves glabrate, or minutely pubescent beneath.

Leaves ovate, short-pointed; twigs purple.

5. *C. stolonifera*.

Leaves ovate-lanceolate, acuminate.

6. *C. candidissima*.

Leaves alternate, clustered at the ends of the flowering branches.

7. *C. alternifolia*.

1. CORNUS CANADENSIS L. Dwarf Cornel, Bunch-berry. M. p. 688. Low woods. Early summer.

Lehigh—Salisbury (Kr.). Northampton—Pen Argyl (Li.).

2. CORNUS FLORIDA L. Flowering Dogwood. M. p. 690. Woods. Spring.

3. CORNUS CIRCINATA L'Her. M. p. 690. Shady, often rocky, situations. Spring.

Philadelphia—Shawmont (Sa.). Bucks—Rock Hill (Fr.). Delaware—Lansdowne (Pe.), Swarthmore (Wa.). Lancaster—(P.). Berks—Mount Penn, Reading (Wn.). Northampton—Pen Argyl (Ja.) (Li.), Wind Gap (Li.).

Hunterdon—Byram (C.).

4. CORNUS AMOMUM Mill. Silky Cornel, Kinnikinnik. M. p. 690. Wet places. Early summer.

5. CORNUS STOLONIFERA Michx. Red-osier Dogwood. M. p. 690. Wet places. Early summer.

Philadelphia—Shawmont (Sa.). Delaware—Wawa (Ja.), Darby, Lazaretto (Wa.). Lehigh—Salisbury (Kr.). Northampton—(P.).

Gloucester—Mickleton, frequent (He.), Swedesboro (Li.). Salem—Woodstown (Wa.).

6. CORNUS CANDIDISSIMA Marsh. M. p. 690. Rich soil. Spring.

Philadelphia—Byberry, Mart. (B. C.), Frankia Wood (Ja.), West Philadelphia (Mac.), Schuylkill above Philadelphia (Pr.). Bucks—Near Sellersville (Fr.), Rock Hill (Ja.), New Hope (Sts.), Haycock Mountain (Wa.). Montgomery—Sumneytown (VP.). Delaware—Near Swarthmore, Dr. Geo. Smith (Fu.), Lansdowne (Pe.), barrens of Middletown (B. Sm.), Chester (W. Tr.). Lancaster—(P.). Lehigh—Salisbury (Kr.). Northampton—(P.).

Burlington—Pemberton (C.). Camden—Delanco (C.), West Colkingwood (Mar.). Gloucester—Swedesboro (Li.). Salem—Salem (He.). Mercer—Princeton (Te.).

New Castle—Allapokas, Kirkwood, etc. Scarce.

7. *CORNUS ALTERNIFOLIA* L. f. M. p. 691. Woods. Early summer.

Philadelphia—Wissahickon near Thorp's Lane (Je.), Germantown (Me.), Schuylkill above Philadelphia (Pr.), Belmont Water-works, Old York Road (Te.), Fairmount Park (Wn.). *Bucks*—Rock Hill (Fr.). *Montgomery*—Schwenksville (Cr.). *Delaware*—Upper Providence, common, Dr. Geo. Smith (Fu.), Lansdowne (Pe.), Wawa (B. Sm.), Concord (W. Tr.), Chester, Valley Forge (Le.). *Lancaster*—(P.). *Lehigh*—Laury's (Kr.). *Northampton*—(P.). *Dauphin*—Harrisburg, Steelton (Wn.). *Burlington*—Pemberton (C.). *Camden*—Kirkwood (C.), Magnolia (Ha.). *Gloucester*—Near Mickleton (He.), Mantua (Ja.), Swedesboro (Li.). *Salem*—Woodstown (Wa.)

New Castle—Above Rockland, common.

CORNUS MASCULA Dur. Introduced. Spring.

Philadelphia—Bartram's Garden (Ja.) (Ka.).

2. *NYSSA* L.1. *NYSSA SYLVATICA* Marsh. *Tupelo, Pepperidge, Black or Sour Gum*. M. p. 691. Rich soil. Spring.

Series 2. GAMOPETALAE.

Order 1. ERICALES.

Stamens free from the corolla, or merely adnate to its base, not united into a tube.

Ovary superior; fruit a capsule, or rarely drupaceous.

Corolla essentially polypetalous.

Ovary 3-celled; shrubs; leaves deciduous.

Fam. 1. *Olethraceae*.

Ovary 4-5-celled; low, mostly evergreen perennials.

Fam. 2. *Pyrolaceae*.

Corolla distinctly gamopetalous (except in *Menotropa* and *Hypopitys*).

Herbaceous saprophytes without green leaves.

Fam. 3. *Monotropaceae*.

Shrubs with normal, often evergreen leaves.

Fam. 4. *Ericaceae*.

Ovary inferior, adnate to the calyx, forming a many-seeded berry or drupe in fruit.

Fam. 5. *Vacciniaceae*.

Stamens borne at the sinuses of the corolla.

Fam. 6. *Diapensiaceae*.

Family 1. *OLETHACEAE* Klotzsch. *White Alder Family*.1. *CLETHRA* L.1. *CLETHRA ALNIFOLIA* L. *White Alder, Sweet Pepperbush*. M. p. 692. Wet copses. Summer.

Philadelphia—Byberry, Mart. (B. C.). *Bucks*—Tullytown (Cr.) (Mac.), Buckingham Valley (Ws.), Penn Valley (Wn.). *Delaware*—Tinicum, Ridley, H. C. Barker (B. C.). *Chester*—(P.). *Northampton*—(P.).

New Jersey—Common.

New Castle—Frequent.

Family 2. **PYROLACEAE** Agardh. Wintergreen Family.

Flowers racemose; leaves basal.

1. *Pyrola*.

Flowers solitary or corymbose; leaves opposite or whorled.

2. *Chimaphila*.1. **PYROLA** L. WINTERGREEN.

Style and stamens declined.

Calyx-lobes oblong or lanceolate; leaves shining.

1. *P. rotundifolia*.

Calyx-lobes ovate or triangular, short; leaves dull.

Blades orbicular, coriaceous, mostly shorter than petioles.

2. *P. chlorantha*.

Blades oval, membranous, longer than their petioles.

3. *P. elliptica*.

Style straight; stamens connivent.

4. *P. secunda*.1. **PYROLA ROTUNDIFOLIA** L. M. p. 693. Dry woods. Early summer.2. **PYROLA CHLORANTHA** Sw. M. p. 693. Dry woods. Early summer.*Bucks*—(P.). *Delaware*—Darby (Fu.). *Lancaster*—(P.). *Berks*—Hamburg.*Burlington*—Banks of Rancocas Creek, Mart. (B. C.), Medford (Br.), Pemberton (C.), Moorestown (Sta.). *Camden*—Camden (C.), Cedar Brook (Wn.). *Gloucester*—Timber Creek (Te.). *Atlantic*—Hammonton (C.). *Monmouth*—Fairhaven (C.).3. **PYROLA ELLIPTICA** Nutt. *Shinleaf*. M. p. 693. Rich woods. Summer.4. **PYROLA SECUNDA** L. M. p. 694. Rich woods. Early summer.*Delaware*—West of Darby, A. H. and C. E. Smith (Fu.). *Montgomery*—Green Lane (VP.). *Chester*—(P.). *Lancaster*—(P.). *Berks*—Hamburg.*Burlington*—Medford (Br.). *Camden*—Blackwood (Re.). *Monmouth*—Freehold (C.).2. **CHIMAPHILA** Pursh.

Leaves lanceolate, mottled with white.

1. *C. maculata*.

Leaves spatulate or cuneate-oblongate, bright green.

2. *C. umbellata*.1. **CHIMAPHILA MACULATA** (L.) Pursh. *Spotted Wintergreen*. M. p. 695. Dry woods. Summer.2. **CHIMAPHILA UMBELLATA** (L.) Nutt. *Pipsissewa*, *Prince's Pine*. M. p. 695. Dry woods. Summer.Family 3. **MONOTROPACEAE** Lindl. Indian-pipe Family.

Flowers solitary.

1. *Monotropa*.

Flowers racemose.

2. *Hypopitys*.1. **MONOTROPA** L.1. **MONOTROPA UNIFLORA** (L.) Small. *Indian-pipe*. M. p. 696. Dark and rich woods. Summer.2. **HYPOPITYS** Hill.1. **HYPOPITYS HYPOPITYS** (L.) Small. *Pine-sap*, *False Beech-drops*. M. p. 696. Oak and pine woods. Summer and fall.

Family 4. **ERICACEAE** DO. Heath Family.

Fruit a septicidal capsule; corolla deciduous; anthers unappendaged.

Corolla somewhat irregular; seeds flat, winged.

Corolla funnel-form, slightly 2-lipped; leaves deciduous.

1. *Asalea*.

Corolla campanulate; leaves evergreen.

2. *Rhododendron*.

Corolla regular; seeds angled or rounded.

Corolla polypetalous.

3. *Dendrium*.

Corolla gamopetalous.

4. *Kalmia*.

Fruit a loculicidal capsule, berry or drupe; corolla deciduous; anthers often awned.

Fruit a dry capsule; calyx not accrescent, mostly small.

Anther-sacs opening by a terminal pore or chink.

Sepals or calyx-tubes imbricated, at least in the bud.

Capsule dehiscent into a single layer of 5 valves.

5. *Leucothoe*.

Capsule dehiscent into 2 layers, the outer 5-valved, the inner 10-valved.

8. *Chamaedaphne*.

Sepals or calyx-lobes valvate, or separate, in the bud.

Anthers 2-awned on the back.

6. *Pieris*.

Anthers awnless.

7. *Xolisma*.

Anther-sacs longitudinally dehiscent.

9. *Epigaea*.

Fruit a drupe, or a capsule enclosed by the fleshy accrescent calyx.

Fruit consisting of the fleshy calyx, surrounding the capsule.

10. *Gaultheria*.

Fruit a drupe with 4 or 5 nutlets.

11. *Arctostaphylos*.

Fruit a septicidal capsule; corolla withering-persistent; anthers appendaged.

12. *Calluna*.

1. **AZALEA** L.

Flowers expanding before or with the leaves.

1. *A. nudiflora*.

Flowers expanding later than the leaves.

Leaves shining, glabrous beneath.

2. *A. arborescens*.

Leaves strigose on the midrib beneath.

3. *A. viscosa*.

1. **AZALEA NUDIFLORA** L. *Purple Azalea, Pinxter-flower.* M. p. 698. Dry woods and thickets. Spring.

1b. **AZALEA NUDIFLORA GLANDIFERA** Pursh.

Delaware—Radnor, Marple (B. Sm.). Lancaster—(P.). Northampton (P.).

2. **AZALEA ARBORESCENS** Pursh. M. p. 698. Woods. Early summer.

Lancaster—McCall's Ferry (Br.).

3. **AZALEA VISCOSA** L. *White Swamp-Honeysuckle.* M. p. 698. Swamps. Early summer.

3a. **AZALEA VISCOSA GLAUCA** Michx. M. p. 699. Swamps. Early summer.

Philadelphia—Byberry, Mart. (B. C.). Delaware—Tinicum (St.).

Chester—North of Coatesville (St.). Lancaster—(P.).

Camden—Atco (Fr.), Delanco (St.). Gloucester—Fairview near Mick-

leton (He.), Swedesboro (Li.). Monmouth—Spring Lake (C.).

New Castle—More rare than *A. viscosa*.

3b. **AZALEA VISCOSA NITIDA** (Pursh.) Britton. M. p. 699.

Lancaster—Smithville (P.). Berks—(P.).

Camden—Haddonfield (VP.).

2. RHODODENDRON L.

1. RHODODENDRON MAXIMUM L. *Great Laurel*. M. p. 699. Woods and along streams. Early summer.

Bucks—Point Pleasant (Fr.), Center Bridge and northward (Ws.).
Montgomery—Above Norristown on the west bank of the Schuylkill (Wn.).
Chester—Valley Forge (Je.). *Lancaster*—Banks of Susquehanna (W. Tr.).
Berks—Hamburg. *Lehigh*—Blue and Lehigh Mountains (Kr.).
Burlington—Florence, Kinkora (C.), Bordentown (Wn.). *Camden*—Sicklersville (Cr.) (Ka.). *Somerset*—Mountainville (C.). *Hunterdon*—High Bridge (C.).

3. DENDRIUM Desv.

1. DENDRIUM BUXIFOLIUM (Berg.) Desv. *Sand Myrtle*. M. p. 700. Sandy pine-barrens. Spring.
New Jersey—Frequent.

4. KALMIA L.

Leaves oblong, mostly obtuse; flowers 6-10 mm. broad. 1. *K. angustifolia*.
 Leaves elliptic or oval, acute; flowers 16-25 mm. broad. 2. *K. latifolia*.

1. KALMIA ANGUSTIFOLIA L. *Sheep Laurel, Lambkill*. M. p. 701. Moist soil. Early summer.
 2. KALMIA LATIFOLIA L. *Calico-bush, Mountain Laurel*. M. p. 701. Woods. Spring.

5. LEUCOTHOE D. Don.

1. LEUCOTHOE RACEMOSA (L.) A. Gray. M. p. 703. Moist thickets. Spring.
Philadelphia—Byberry, Mart. (B. C.). *Bucks*—Ridge Road, Bristol (Fr.). *Montgomery*—Shannonville (Cr.). *Delaware*—Tinicum, Cobb's Creek near Sellers' Mills (Te.), Kellyville (Wn.). *Lancaster*—Smithville (Ca.).
New Jersey—Common.
New Castle—Frequent.

6. PIERIS D. Don.

1. PIERIS MARIANA (L.) Benth. & Hook. *Stagger-bush*. M. p. 704. Sandy soil. Spring.
Philadelphia—Byberry, Mart. (B. C.), Wissahickon (Me.), Shawmont (Sa.), Angora (W. Tr.). *Bucks*—Bristol (P.), Buckingham Valley (Ws.). *Montgomery*—Roslyn (Pr.), Edge Hill (Re.), Willow Grove (U. C. S.). *Delaware*—Tinicum (Fu.) (B. Sm.), Lansdowne (Pe.), Kellyville (Te.), Folsom (Ws.). *Chester*—(P.). *Lancaster*—(P.).
New Jersey—Common.
New Castle—General and frequent.

7. XOLISMA Raf.

1. XOLISMA LIQUSTRINA (L.) Britton. M. p. 704. Wet grounds. Early summer.

8. CHAMAEDAPHNE Moench.

1. CHAMAEDAPHNE CALYCVLATA (L.) Moench. *Leather-leaf*. M. p. 705. Bogs. Spring.

New Jersey—Common.

New Castle—First found at Thompson's. Abundant near Townsend, Commons and Tatnall.

9. EPIGAEA L.

1. EPIGAEA REPENS L. *Trailing Arbutus*. M. p. 705. Sandy woods and rocky soil. Spring.

10. GAULTHERIA L.

1. GAULTHERIA PROCUMBENS L. *Teaberry, Wintergreen, Checkerberry*. M. p. 705. Woods. Summer.

11. ARCTOSTAPHYLOS Adans. BEAR-BERRY.

1. ARCTOSTAPHYLOS UVA-URSI (L.) Spreng. M. p. 706. Rocks and bare hills. Spring.

Bucks—(P.).

Burlington—"The Plains," Atsion (Wn.), Whittings (St.). *Atlantic*—Pleasant Mills, E. A. Rau (B. C.), Elwood (Te.). *Ocean*—Center Bridge, Dr. J. B. Brinton (He.), Davenport (Mac.). *Hunterdon*—Hol-land (Ja.). *Middlesex*—South Amboy (C.).

12. CALLUNA Salisb.

1. CALLUNA VULGARIS (L.) Salisb. *Heather*. M. p. 706. Sandy soil; introduced. Summer.

Atlantic—Egg Harbor.

OXYDENDRUM ARBOREUM (L.) DC. *Sorrel-tree, Sour-wood*. Cultivated. Early summer.

Family 5. VACCINIACEAE Lindl. Huckleberry Family.

Ovary 10-celled; fruit a berry-like drupe with 10 1-seeded nutlets.

1. *Gaylussacia*.

Ovary 4-5-celled; fruit a many-seeded berry.

Corolla open-campanulate, 4-5-lobed.

2. *Polycodium*.

Corolla cylindric, subglobose or urceolate.

3. *Vaccinium*.

Corolla deeply 4-cleft or 4-divided, the lobes reflexed.

4. *Oxycoocus*.

1. GAYLUSSACIA H. B. K.

Leaves pale and glaucous beneath, resinous; fruit blue with a bloom.

1. *G. frondosa*.

Leaves green both sides, resinous; fruit mostly black.

Bracts small, deciduous, mostly shorter than the pedicels.

2. *G. resinosa*.

Bracts oval, large, persistent, longer than the pedicels.

3. *G. dumosa*.

1. GAYLUSSACIA FRONDOSA (L.) Torr. & Gray. *Blue Tangle, Dangleberry*. M. p. 707. Low copses. Spring.

Philadelphia—Mill's Wood (Je.), Germantown (Me.). *Bucks*—Glen Lake, Penn Valley (Br.). *Montgomery*—Shannonville (Cr.). *Delaware*—Valley of Darby Creek (B. Sm.). *Chester*—North of Coatesville (St.). *Lancaster*—(P.). *Lehigh*—Lehigh Mountain (Kr.). *Northampton*—(P.).

New Jersey—Common.

New Castle—Frequent.

2. GAYLUSSACIA RESINOSA (Ait.) T. & G. *Black Huckleberry*. Woods and thickets. Spring.
3. GAYLUSSACIA DUMOSA (Andr.) T. & G. M. p. 708. Sandy swamps. Spring.
Montgomery—(P.). *Chester*—(P.). *Lancaster*—Pleasant Grove (Ca.).
New Jersey—Frequent.
New Castle—Thompson's, etc. Scarce.

2. POLYCODIUM Raf.

1. POLYCODIUM STAMINEUM (L.) Greene. *Deerberry*, *Squaw Huckleberry*. M. p. 708. Dry woods. Spring.

3. VACCINIUM L. BLUEBERRY. HUCKLEBERRY.

Corolla cylindric or nearly so, 2-3 times as long as thick.

Corolla urn-shaped, oblong or oblong-cylindric, 1-2 times as long as thick.
 Leaves not glaucous, glabrous or pubescent beneath.

Leaves mostly entire, pubescent beneath.

Shrub 1-5 m. high; leaves oval, large; fruit black.

1. *V. corymbosum*.

Shrub 1.5-6 dm. high; leaves oblong, small; fruit blue.

2. *V. atrococcum*.

3. *V. Canadense*.

Leaves serrulate, nearly or quite glabrous; low shrub; fruit blue.

4. *V. Pennsylvanicum*.

Leaves pale and glaucous beneath, mostly glabrous on both sides.

5. *V. vacillans*.

1. VACCINIUM CORYMBOSUM L. *Tall Blueberry*. M. p. 710. Swamps and low thickets. Spring.
2. VACCINIUM ATROCOCIMUM (A. Gray) Heller. *Black Blueberry*. M. p. 710. Swamps and wet woods. Spring.
Bucks—Solebury, New Hope (Ws.). *Montgomery*—(P.). *Chester*—(P.). *Lancaster*—(P.). *Dauphin*—(P.).
Burlington—Burlington, Pemberton (C.). *Camden*—Winslow (St.).
Gloucester—Mickleton (Ha.), Swedesboro (Li.). *Ocean*—Forked River, Toms River (C.). *Hunterdon*—Rosemont (C.).
New Castle—Border of Cedar Swamp, Tatnall; Mount Cuba, Commons. Rare.
3. VACCINIUM CANADENSE Richards. M. p. 710. Moist places. Spring.
Northampton—Easton, Porter (B. C.).
4. VACCINIUM PENNSYLVANICUM Lam. *Dwarf Blueberry*. M. p. 710. Dry hills. Spring.
Bucks—Lahaska (Ws.). *Lancaster*—(P.). *Lehigh*—Blue Ridge (Kr.).
Northampton—(P.).
Burlington—Pemberton (C.), Ballinger's Mill (St.), Brown Mills (St.).
Camden—Atco (C.), Clementon (Ha.), Lindenwold (VP.), Haddonfield (Te.).
Gloucester—Fairview near Mickleton (Ha.), Swedesboro (Li.), Westville (U. C. S.). *Salem*—Elsinboro (C.). *Cumberland*—Millville (Je.). *Atlantic*—Hammononton (Cr.).
New Castle—Not rare.
5. VACCINIUM VACILLANS Kalm. *Low Blueberry*. M. p. 710. Dry places. Spring.

4. OXYCOCCUS Salisb.

1. OXYCOCCUS MACROCARPUS (Ait.) Pers. *Cranberry*. M. p. 711. Bogs. Summer.

Philadelphia — Byberry, Mart. (B. C.), Germantown, extinct (Me.).
Bucks—Springfield (Fr.). *Montgomery*—(P.). *Delaware*—Tinicum,
 Rhoads' Swamp, Marple (B. Sm.). *Chester*—(P.). *Lancaster*—(P.).
Northampton—(P.).

New Jersey—Common.

New Castle—Thompson's. Rare.

Family 6. DIAPENSIACEAE Link. *Diapensia* Family.

1. PYXIDANTHERA BARBULATA Michx. *Pyxis, Flowering Moss*. M. p. 712.
 Sandy pine-barrens. Early spring.

New Jersey—Common.

Order 2. PRIMULALES.

Style 1; fruit a capsule.

Fam. 1. *Primulaceae*.

Styles 5; fruit an achene or utricle.

Fam. 2. *Plumbaginaceae*.

Family 1. PRIMULACEAE Vent. *Primrose* Family.

Lobes or segments of the corolla erect or spreading.

Lobes of the corolla imbricated, at least in the bud.

Ovary wholly superior.

1. *Hottonia*.

Ovary adnate to the calyx.

2. *Samolus*.

Lobes of the corolla convolute or valvate, at least in the bud (corolla wanting in No. 7).

Capsule longitudinally dehiscent.

Corolla rotate, or rarely short-funnelform.

Stem leafy throughout; flowers yellow.

Staminodia none; corolla-lobes convolute.

3. *Lysimachia*.

Staminodia 5; each corolla-lobe curved around its stamen.

4. *Steironema*.

Staminodia 5, tooth-like; flowers in axillary, spike-like racemes or heads.

5. *Naumburgia*.

Leaves whorled at the top of the stem; flowers white.

6. *Trientalis*.

Corolla none; flowers minute, solitary in the axils.

7. *Glaux*.

Capsule circumscissile; flowers axillary.

8. *Anagallis*.

Segments of the corolla reflexed; plants scapose.

9. *Dodecatheon*.

1. HOTTONIA L.

1. HOTTONIA INFLATA Ell. *Featherfoil, Water Violet*. M. p. 715. Ponds and ditches. Summer.

Salem—Riddleton. *Monmouth*—Eatontown (C.).

New Castle—Near Ogletown.

2. SAMOLUS L.

1. SAMOLUS FLAIBUNDUS H. B. K. *Water Pimpernel, Brookweed*. M. p. 715. Wet places. Summer.

Philadelphia — Philadelphia (Ca.), Delaware at Torresdale (Wa.).
Bucks—Ridge Valley (Fr.), Upper Black Eddy, Ringing Rocks (Wa.).
Chester—(P.). *Lancaster*—(P.).
New Jersey—Frequent throughout.
New Castle—Bellevue, Commons.

3. *LYSIMACHIA* L. LOOSESTRIFE.

Leaves verticillate in 3's-7's, or some of them rarely opposite.

Corolla rotate-campanulate, pure yellow, 1-2.5 cm. broad.

1. *L. vulgaris*.

Corolla rotate, 0.8-1.6 cm. broad, its lobes dark-streaked.

2. *L. quadrifolia*.

Leaves opposite, or some of them rarely alternate.

Flowers in a terminal virgate raceme; stem erect.

3. *L. terrestris*.

Flowers axillary, solitary; stem creeping.

4. *L. Nummularia*.

1. *LYSIMACHIA VULGARIS* L. M. p. 715. Fields and roadsides. Summer.

Montgomery—Bryn Mawr (Gi.). *Delaware*—Tinicum, T. C. Palmer

(Fu.). *Lancaster*—York Furnace (Cr.) (He.) (Ke.), Conewago Falls,

Susquehanna (Le.).

Ocean—Forked River.

2. *LYSIMACHIA QUADRIFOLIA* L. M. p. 716. Moist or sandy soil. Summer.

3. *LYSIMACHIA TERRESTRIS* (L.) B. S. P. M. p. 716. Low grounds. Summer.

4. *LYSIMACHIA NUMMULARIA* L. *Moneywort*. M. p. 716. Moist places. Summer.

4. *STEIRONEMA* Raf. LOOSESTRIFE.

Leaves ovate to lanceolate.

1. *S. ciliatum*.

Leaves lanceolate, oblong or linear.

2. *S. lanceolatum*.

1. *STEIRONEMA CILIATUM* (L.) Raf. M. p. 717. Low grounds and thickets. Summer.

2. *STEIRONEMA LANCEOLATUM* (Walt.) A. Gray. M. p. 717. Low grounds and thickets. Summer.

Bucks—Tullytown (Cr.) (Mac.), Bristol (P.). *Lancaster*—York Furnace (Cr.) (He.) (Le.), above McCall's Ferry (Br.).

Burlington—Delanco (V.P.).

Gloucester—Mickleton, station destroyed (He.), Washington Park (Ja.), Swedesboro (Li.).

New Castle—Near S. H., Ogletown, etc.

5. *NAUMBERGIA* Moench.

1. *NAUMBERGIA THYSIFLORA* (L.) Dnhy. Tufted Loosestrife. Swamps.

Early summer.

Hunterdon—Stockton (C.).

6. *TRIENTALIS* L.

1. *TRIENTALIS AMERICANA* Pursh. Chickweed Wintergreen, Star-flower.

M. p. 718. Damp, cold woods. Spring.

Philadelphia—Germantown (Me.). *Bucks*—(P.). *Delaware*—Tini-

cum, *A. H. Smith*, locality now destroyed (Fu.). *Chester*—(P.). *Lancaster*—(P.). *Berks*—(P.). *Lehigh*—Lehigh Mountain (Kr.), Lehigh Valley (Sch.). *Northampton*—(P.).

Burlington—Pemberton (C.), Moorestown (Sta.). *Camden*—Camden (C.), Kaighn's Point (Fr.), Clementon (Je.) (Sa.), Ancora (Te.). *Gloucester*—Woodbury (C.), near Mickleton (He.). *Salem*—Quinton (C.). *Cumberland*—Vineland (C.). *Cape May*—Stone Harbor (Br.), Anglesea (Li.), Wildwood (He.) (Wn.) *Atlantic*—Pleasant Mills, Atlantic City (C.), May's Landing (Le.) (Wn.), Hammonton (Sa.), Absecon (Wn.). *Ocean*—Point Pleasant (Br.), Toms River (Ke.) (Wn.). *Monmouth*—Ocean Grove, *I. Burk* (He.), Deal (Wn.).

7. GLAUX L.

1. *GLAUX MARITIMA* L. *Sea Milkwort*. M. p. 718. Sea-beaches. Summer. *Monmouth*—Deal Beach (C.).

8. ANAGALLIS L.

1. *ANAGALLIS ARVENSIS* L. *Common Pimpernel*, *Poor Man's Weather-glass*. M. p. 718. Waste places. Summer.

9. DODECATHEON L.

1. *DODECATHEON MEADIA* L. *Shooting-star*. M. p. 719. Rich woods. Spring.
Philadelphia—Bartram's Garden (Te.). *Montgomery*—Ivy Rock (Wn.).
Lancaster—Columbia (Kr.), Fulton Twp. (Pr.).

Family 2. PLUMBAGINACEAE Lindl. Plumbago Family.

1. LIMONIUM Adans.

1. *LIMONIUM CAROLINIANUM* (Walt.) Britton. *Sea Lavender*, *Marsh Rosemary*. M. p. 719. Salt meadows. Summer and fall.
New Jersey—Common.
New Castle—Deakynes' Landing, *Commons*.

Order 3. EBENALES.

Styles 2-8; flowers mostly monœcious or diœcious. Fam. 1. *Ebenaceae*.
Style 1, simple or lobed; flowers mostly perfect. Fam. 2. *Styracaceae*.

Family 1. EBENACEAE Vent. Ebony Family.

1. DIOSPYROS L.

1. *DIOSPYROS VIRGINIANA* L. *Persimmon*. M. p. 721. Woods and old fields. Spring.

Family 2. STYRACACEAE A. DC. Storax Family.

1. *MOHRODENDRON CAROLINUM* (L.) Britton. *Snow-drop* or *Silver-bell Tree*. M. p. 722. Cultivated. Spring.

Order 4. GENTIANALES.

Stamens (usually 2) fewer than the corolla-lobes, or corolla none; trees or shrubs. Fam. 1. *Oleaceae*.

Stamens as many as the corolla-lobes; mostly herbs.

Stigmas distinct; juice not milky; ovary 1, compound.

Ovary 2-celled; leaves stipulate, or their bases connected by a stipular line. Fam. 2. *Loganiaceae*.

Ovary 1-celled, leaves not stipulate.

Leaves opposite or rarely verticillate; corolla-lobes convolute or imbricated in the bud. Fam. 3. *Gentianaceae*.

Leaves basal or alternate; corolla-lobes induplicate-valvate in the bud; marsh or aquatic herbs. Fam. 4. *Menyanthaceae*.

Stigmas united; juice milky; ovaries 2.

Styles united; stamens distinct; pollen of simple grains.

Fam. 5. *Apocynaceae*.

Styles distinct; stamens mostly monadelphous; pollen-grains united into waxy masses. Fam. 6. *Asclepiadaceae*.

Family 1. OLEACEAE Lindl. Olive Family.

Fruit a loculicidal capsule; leaves simple; flowers complete. 1. *Syringa*.

Fruit a samara; leaves pinnate; flowers mostly dioecious; corolla wanting. 2. *Fraxinus*.

Fruit a drupe or berry; leaves simple.

Flowers polypetalous; petals linear.

3. *Chionanthus*.

Flowers gamopetalous; petals not linear.

4. *Ligustrum*.

1. SYRINGA L.

1. SYRINGA VULGARIS L. *Lilac*. M. p. 724. Escaped from cultivation. Spring.

2. FRAXINUS L. ASH.

Lateral leaflets stalked; calyx present in the fertile flowers.

Body of the samara terete or nearly so, the wing chiefly terminal.

Wing almost entirely terminal.

Foliage and twigs glabrous or nearly so. 1. *F. Americana*.

Foliage and twigs pubescent. 2. *F. Biltmoreana*.

Wing manifestly extending down on the sides of the body.

Wing of samara spatulate.

Foliage, twigs and pedicels glabrous or very nearly so.

3. *F. lanceolata*.

Foliage, young twigs and pedicels velvety-pubescent.

4. *F. Pennsylvanica*.

Wing of samara long-linear.

5. *F. Darlingtonii*.

Body of the samara flat, the wing extending all around it.

6. *F. quadrangulata*.

Lateral leaflets sessile; calyx none; samara winged all around.

7. *F. nigra*.

1. FRAXINUS AMERICANA L. *White Ash*. M. p. 724. Rich woods. Spring.

2. FRAXINUS BILTMOREANA Beadle. M. p. 725. Woods. Spring.

Lancaster—McCall's Ferry (P.).

3. FRAXINUS LANCEOLATA Borck. *Green Ash*. M. p. 725. Along streams. Spring.

Philadelphia—Wissahickon (U. C. S.), Angora (Te.). *Lancaster*—Susquehanna River below Peach Bottom, Dr. Geo. Smith (B. Sm.).

Gloucester—Mullica Hill (C.), Center Square (He.). *Mercer*—Trenton (C.). *Hunterdon*—Stockton (C.).

New Castle—Greenbank, ~~Common~~; Brandywine, Tatnall; Stanton.

4. *FRAXINUS PENNSYLVANICA* Marsh. *Red Ash*. M. p. 725. Low grounds. Spring.

Philadelphia—Byberry, Mart. (B. C.). *Bucks*—Near Sellersville (Fr.), Argus (Ke.). *Montgomery*—Schwenksville (Cr.). *Delaware*—Valley of Darby Creek (B. Sm.), Concord (W. Tr.). *Chester*—Brandywine Creek (Sch.). *Lancaster*—(P.). *Northampton*—(P.).

Gloucester—Penn's Grove (C.), Mickleton (He.), Swedesboro (Li.).

New Castle—Along Brandywine. Frequent.

5. *FRAXINUS DARLINGTONII* Britton. M. p. 725. Woods. Spring.

Chester—Along the Brandywine (Fl. Cest.).

6. *FRAXINUS QUADRANGULATA* Michx. *Blue Ash*. M. p. 725. Cultivated. Spring.

7. *FRAXINUS NIGRA* Marsh. *Black Ash*. M. p. 725. Swamps and wet banks. Spring.

Philadelphia—Byberry, Mart. (B. C.), Wissahickon (Me.). *Bucks*—Near Sellersville (Fr.). *Delaware*—Valley of Darby Creek (B. Sm.), Concord (W. Tr.), north from Overbrook (VP.).

Gloucester—Near Swedesboro (Li.). *Monmouth*—Freehold (C.). *Hunterdon*—Rosemont, Pittstown (C.).

New Castle—Brandywine Creek, Red Clay Creek, Carcroft. Rare.

3. CHIONANTHUS L.

1. *CHIONANTHUS VIRGINICA* L. *Fringe-tree*. M. p. 726. Moist thickets. Spring.

Philadelphia—Bartram's Garden (Ha.), Schuylkill (Sch.). *Chester*—Along the Brandywine (P.). *Lancaster*—York Furnaces (Cr.) (Li.).

Gloucester—Raccoon Creek above Swedesboro (Li.). *Cumberland*—Bridgeton, Millville (C.), South Vineland (Je.). *Atlantic*—Buena Vista (C.).

New Castle—Frequent.

4. LIGUSTRUM L.

1. *LIGUSTRUM VULGARE* L. *Privet*. M. p. 726. Escaped from cultivation. Early summer.

Family 2. LOGANIACEAE Dumort. Logania Family.

1. POLYPREMUM L.

1. *POLYPREMUM PROCUMBENS* L. M. p. 728. Dry, sandy soil. Summer.

Philadelphia—Old Navy Yard, Dr. Geo. Smith (Fu.).

Camden—Lindenwold (VP.).

Family 3. GENTIANACEAE Dumort. Gentian Family.

Leaves normal; corolla-lobes convolute in the bud.

Style filiform; anthers usually twisting or recurving when old.

Corolla salverform.

Corolla rotate.

1. *Erythraea*.

2. *Sabbatia*.

Style short, stout or none; anthers remaining straight. 3. *Gentiana*.
Leaves, at least those of the stem, reduced to scales; corolla-lobes imbricate in the bud.

Calyx of 4 lanceolate sepals; leaves all reduced to scales. 4. *Bartonia*.
Calyx of 2 foliaceous-spatulate sepals; upper leaves normal.

5. *Obolaria*.

1. ERYTHRAEA Neck.

1. *ERYTHRAEA PULCHELLA* (Sw.) Fries. *Centaury*. M. p. 729. Fields and waste places. Summer.

Chester—Chester Valley near Malvern (Ls.). Lancaster—Millville, A. P. Garber (B. C.), York Furnace (He.) (Ke.), Paradise (St.), on road between Safe Harbor and Lancaster (Wn.), Wakefield (Pr.).
Burlington—West Creek (St.).

2. SABBATIA Adans.

Flowers normally 4-5-parted, sometimes 6-7-parted.

Branches opposite.

Style 2-parted to below the middle or nearly to the base; flowers white. 1. *S. lanceolata*.

Style 2-cleft to about the middle; flowers normally pink.

2. *S. angularis*.

Branches alternate.

Calyx shorter than the corolla; style 2-parted. 3. *S. stellaris*.

Calyx-segments filiform, as long as the corolla; style 2-cleft.

4. *S. campanulata*.

5. *S. dodecandra*.

Flowers normally 8-12-parted, 3.5-6 cm. broad.

1. *SABBATIA LANCEOLATA* (Walt.) T. & G. M. p. 729. Wet pine-barrens. Summer.

New Jersey—Common.

2. *SABBATIA ANGULARIS* (L.) Pursh. *Rose Pink*. M. p. 730. Rich soil. Summer.

3. *SABBATIA STELLARIS* Pursh. *Marsh Pink*. M. p. 730. Salt marshes. Summer.

New Jersey—Common.

New Castle—Deakynes' Landing.

4. *SABBATIA CAMPANULATA* (L.) Torr. M. p. 730. Brackish marshes. Summer.

Bucks—Tallytown, Bristol (Ca.) (Fr.).

Burlington—Burlington, Mart. (B. C.). Camden—Atco (U. C. S.).

Cape May—Cape May Court-house (C.), Cape May, Dr. Geo. Smith (Fu.),

Wildwood (Mac.). Ocean—Seaside Park (Ha.), Point Pleasant (Te.).

Monmouth—Ocean Grove, Ocean Beach, Spring Lake (C.).

5. *SABBATIA DODECANDRA* (L.) B. S. P. M. p. 731. Border of brackish ponds. Summer.

New Jersey—Frequent.

3. GENTIANA L. GENTIAN.

Corolla without plaits or teeth in the sinuses; annuals.

Corolla-lobes fringed or serrate; flowers 2-8 cm. long.

1. *G. crinita*.

Corolla-lobes with entire or rarely denticulate margins; flowers 1-2.5 cm. long.

2. *G. quinquefolia*.

Corolla with membranous, toothed or lobed plaits in the sinuses; perennials.
Margins of leaves and calyx-lobes scabrous or ciliate; seeds winged.

Corolla-lobes distinct, longer than or equalling the plaits.

3. *G. Saponaria*.

Corolla-lobes none or minute, the plaits very broad.

4. *G. Andrewsii*.

Margins of leaves and calyx-lobes smooth or nearly so.

Flowers clustered, sessile, 2-bracteolate under the calyx.

Corolla-lobes ovate, twice as long as the plaits; leaves narrow;
seeds winged.

5. *G. flavida*.

Corolla-lobes triangular-lanceolate; leaves obovate; seeds wing-
less.

6. *G. villosa*.

Flowers solitary, peduncled, not bracteolate; leaves linear.

7. *G. Porphyrio*.

1. GENTIANA CRINITA Froel. *Fringed Gentian*. M. p. 732. Low grounds.
Autumn.

Philadelphia — Wissahickon. *Bucks* — Rock Hill (Cr.) (Fr.) (Ke.),
Buckingham Valley (Ws.). *Montgomery* — Schwenksville (Je.), Sumney-
town (VP.). *Delaware* — Marple, Cheyney (Fu.), Williamson, Wawa
(Sa.), Schofield's Barrens Middletown (B. Sm.), Elwyn (U. C. S.),
Chad's Ford (Te.), Concord (W. Tr.), Mill Creek near Haverford (Le.).
Chester — Coatesville, H. E. Stone (St.). *Lancaster* — (P.). *Berks* — (P.).
Lehigh — East of Rhinetown Bridge near Jordan (Kr.). *Northampton* —
(P.).

Burlington — Pemberton (C.). *Camden* — Lindenwold (VP.). *Mon-*
mouth — Keyport (C.).

New Castle — Lovering's; Twadell's, Tatnall; Point Lookout, South-
wood, Canby; Mount Cuba, Faulkland, Brandywine Spa, Commons.

2. GENTIANA QUINQUEFOLIA L. *Ague-weed*. M. p. 732. Moist hills.
Autumn.

Bucks — Durham, Ruth (Fr.). *Lehigh* — Lehigh River below Allentown
(Kr.). *Northampton* — Easton, Porter. (B. C.).

Monmouth — Freehold (C.). *Mercer* — Hightstown (C.).

3. GENTIANA SAPONARIA L. *Soapwort Gentian*. M. p. 733. Wet soil.
Autumn.

Bucks — Tullytown (Ja.). *Montgomery* — Edge Hill (Je.) (Re.), Wil-
low Grove (U. C. S.). *Delaware* — Haverford (Le.), Swarthmore (Pr.),
Tinicum (B. Sm.), Chad's Ford (Te.), Concord (W. Tr.). *Chester* —
(P.). *Lancaster* — Smithville (Ca.), York Furnace (Cr.). *Dauphin* —
Cold Spring (P.).

Burlington — Medford (Br.), Moorestown (Sta.). *Camden* — Kaighn's
Point, C. A. Beica (B. C.), Berlin (Te.), Clementon, Lindenwold (VP.).
Atlantic — May's Landing (Le.). *Monmouth* — Swimming River, Shark
River (C.). *Mercer* — Trenton, Princeton (C.). *Hunterdon* — Rosemont
(C.).

New Castle — Hand's, Thompson's, P. Clark's, etc. Frequent.

4. GENTIANA ANDREWSII Griseb. *Closed Gentian*. M. p. 733. Moist
ground. Autumn.

5. GENTIANA FLAVIDA A. Gray. M. p. 733. Moist soil. Autumn.

Bucks — Durham, Ruth (P.). *Lehigh* — (P.).

6. GENTIANA VILLOSA L. M. p. 733. Shaded places. Autumn.

Bucks—Buckingham Valley, C. A. Boice (B. C.). *Delaware*—Darby Creek below Kellyville, Dr. Geo. Smith (B. Sm.), near Media (Fu.), Elwyn (U. C. S.). *Chester*—W. Bradford Twp. (St.). *Lancaster*—(P.). *Berks*—(P.).

Cumberland—Bridgeton (C.).

New Castle—Brandywine, Tatnall; Centerville, Greenbank, Commons; Townsend, Canby.

7. *GENTIANA PORPHYRIO* J. F. Gmel. M. p. 734. Moist pine-barrens. Autumn.

Burlington—"The Plains" (Br.) (St.), Atsion. *Atlantic*—Egg Harbor, Mullica River (C.), Hammonton (Je.), May's Landing (Li.), Elwood (Te.).

4. *BARTONIA* Muhl.

1. *BARTONIA VIRGINICA* (L.) B. S. P. M. p. 735. Open woods. Late summer.

5. *OBOLARIA* L.

1. *OBOLARIA VIRGINICA* L. *Pennywort*. M. p. 735. Moist woods. Spring. *Philadelphia*—Limekiln Pike and County Line (Je.), Wissahickon (He.) (Me.). *Bucks*—Argus, Rock Hill (Fr.), Tylersport (Ja.), Solebury Twp. (Ws.). *Montgomery*—Bryn Mawr (Ha.) (Ke.), Wynnewood (Be.), Cheltenham Hills (Te.). *Delaware*—Swarthmore, Dr. J. B. Brinton (Ke.) (St.), Radnor (Cr.), Wawa (Sa.), Concord (W. Tr.). *Chester*—Falls of French Creek (Ja.), Devon, H. A. Lang (VP.), Westtown (Le.). *Lancaster*—York Furnace (Cr.). *Berks*—(P.). *Lehigh*—Near St. Luke's Hospital (Kr.). *Northampton*—(P.).

Camden—Haddonfield (C.). *Gloucester*—Swedesboro (Li.). *Salem*—Salem (C.). *Mercer*—Asylum, Princeton, Lawrenceville (C.). *Somerset*—Rocky Hill (C.). *Hunterdon*—Bloomsburg, Lambertville, Rosemont (C.). *New Castle*—Brandywine, Faulkland, Iron Hill, Canby and Tatnall. Frequent.

Family 4. **MENYANTHACEAE** G. Don. **Buckbean Family.**

Leaves 3-foliolate; swamp plant.

Leaves simple, entire, cordate, floating.

1. *Menyanthes*.

2. *Limnanthemum*.

1. *MENYANTHES* L.

1. *MENYANTHES TRIFOLIATA* L. *Buckbean*. M. p. 736. Bogs. Early summer.

Bucks—Rock Hill (Cr.) (Fr.). *Lancaster*—Near Lancaster (Ca.).

Gloucester—Repaupo (Cr.).

New Castle—Thompson's, Tatnall. Probably now extinct.

2. *LIMNANTHEMUM* S. G. Gmelin.

1. *LIMNANTHEMUM LACUNOSUM* (Vent.) Griseb. *Floating Heart*. M. p. 736. Shallow water. Summer.

Bucks—Bristol, Mart. (B. C.) (Te.).

Burlington—Atsion (Fr.) (Te.), Quaker Bridge (Pr.) (Te.). *Gloucester*—Center Square (He.), Malaga (Ha.), near Swedesboro (Li.). *Salem*

—Woods Mills (Wa.). *Cumberland*—Vineland (Re.). *Atlantic*—Ham-
 monton (Cr.) (Je.), Egg Harbor, extinct (Wn.). *Ocean*—Point Pleasant
 (Wn.). *Monmouth*—Spring Lake (Wn.). *Mercer*—Princeton Junction
 (C.).

Family 5. **APOCYNACEAE** Lindl. **Dogbane Family.**

Leaves alternate; erect herbs.

1. *Amsonia*.

Leaves opposite; vines or herbs.

2. *Vinca*.

Flowers large, axillary, solitary.

Flowers small, cymose.

3. *Apocynum*.

Erect or diffuse herbs; corolla campanulate to urceolate.

High-climbing vines; corolla funnelform.

4. *Trachelospermum*.

1. **AMSONIA** Walt.

1. **AMSONIA AMSONIA** (L.) Britton. M. p. 737. Cultivated; residue of
 nurseries. Spring.

2. **VINCA** L.

1. **VINCA MINOR** L. *Periwinkle*. M. p. 738. Escaped from cultivation.
 Spring.

3. **APOCYNUM** L. **DOGbane.**

Corolla 5-9 mm. long, its lobes spreading or recurved.

1. *A. androsaemifolium*.

Corolla 3-4.5 mm. long, its lobes erect or nearly so.

Leaves and cymes glabrous, or somewhat pubescent.

Leaves petioled, mostly narrowed at the base.

Leaves ovate-oblong to lanceolate, 2-4 times as long as wide;
 flowers green to whitish.

2. *A. cannabinum*.

Leaves oblong-lanceolate, 4-6 times as long as wide; flowers
 white.

3. *A. album*.

Leaves sessile or very nearly so, mostly cordate-clasping or obtuse
 at the base.

4. *A. hypericifolium*.

Whole plant, including the cymes, densely soft-pubescent.

5. *A. pubescens*.

1. **APOCYNUM ANDROSAEMIFOLIUM** L. *Honey Bloom*. M. p. 738. Borders
 of thickets and fields. Early summer.

2. **APOCYNUM CANNABINUM** L. *Indian Hemp*. M. p. 739. Fields and
 thickets. Summer.

3. **APOCYNUM ALBUM** Greene. M. p. 739. On river-shores and similar
 situations. Summer.

Bucks—(P.). *Lancaster*—(P.). *Northampton*—(P.).

4. **APOCYNUM HYPERICIFOLIUM** Ait. M. p. 739. Dry soil or along streams.
 Summer.

Salem—Banks of Delaware (C.).

New Castle—Hamburg Cove, Edgemoor.

5. **APOCYNUM PUBESCENS** R. Br. M. p. 739.

New Jersey—Common throughout the state (C.).

New Castle—Similar situations as *A. cannabinum*, Jessups. Not rare.

4. **TRACHELOSPERMUM** Lemaire.

1. **TRACHELOSPERMUM DIFFORME** (Walt.) A. Gray. M. p. 739. Damp
 grounds. Summer.

Philadelphia—Gibson's Point (Mac.). *Delaware*—Lansdowne on the railroad (Pe.).

New Castle—Cedar Swamp, Townsend, *Commons*.

Family 6. **ASCLEPIADACEAE** Lindl. **Milkweed Family.**

Erect or decumbent herbs.

Corona-hoods each with an incurved horn within; leaves mostly opposite.

Corona-hoods unappendaged or with a thickened, crest-like keel; leaves opposite or alternate.

Twining vines.

Anthers tipped with a scarious membrane; pollen-masses pendulous.

Anthers merely tipped; pollen-masses horizontal.

1. *Asclepias*.

2. *Acerates*.

3. *Cynanchum*.

4. *Vincetoxicum*.

1. **ASCLEPIAS** L. **MILKWEED.**

Corolla and corona orange; leaves alternate or opposite.

Stem erect or ascending; leaves nearly all alternate.

Stem reclining; leaves, at least the upper, opposite, oblong or oval.

1. *A. tuberosa*.

2. *A. decumbens*.

Corolla bright red or purple; leaves opposite.

Flowers 2-4 mm. broad; corona-hoods 4-6 mm. high.

Leaves lanceolate or linear; hoods oblong, obtuse.

3. *A. lanceolata*.

Leaves ovate or ovate-lanceolate; hoods lanceolate.

4. *A. rubra*.

Leaves oblong, ovate or ovate-oblong; hoods oblong, acutish.

5. *A. purpurascens*.

Flowers 4-6 mm. broad; corona-hoods 2-3 mm. high.

Plant nearly or quite glabrous; leaves lanceolate or oblong-lanceolate.

6. *A. incarnata*.

Plant pubescent; leaves oblong.

7. *A. pulchra*.

Corolla greenish, purplish, yellowish or white; leaves opposite or verticillate.

Leaves ovate, oblong, ovate-lanceolate, obovate or orbicular.

Plants glabrous throughout, or minutely pubescent above.

Leaves sessile, clasping, or very short-petioled.

8. *A. amplexicaulis*.

Leaves manifestly petioled.

Corolla greenish; umbels loose; pedicels drooping.

9. *A. exaltata*.

Corolla white; umbels dense.

10. *A. variegata*.

Corolla pink; some of the leaves verticillate in 4's.

11. *A. quadrifolia*.

Plants, at least the lower surfaces of the leaves, canescent or tomentose.

12. *A. Syriaca*.

Leaves lanceolate, oblong-lanceolate or linear.

13. *A. verticillata*.

1. **ASCLEPIAS TUBEROSA** L. *Butterfly-weed, Pleurisy-root.* M. p. 741. Dry fields. Summer.

Philadelphia—Byberry, Mart. (B. C.), below Gray's Ferry Station, West Fairmount Park (Mac.). *Bucks*—Sellersville (Fr.), Buckingham (Ws.). *Montgomery*—Shannonville (Cr.), Bryn Mawr (Gi.), Spring Mill (Ha.). *Delaware*—Collingdale, H. C. Barker (B. C.), Williamson (Ke.), Swarthmore (Pr.), near Media (B. Sm.), Concord (W. Tr.). *Chesler*—Near Westtown (Le.). *Lehigh*—Coplay (Kr.). *Northampton*—Easton, Porter (B. C.).

- New Jersey*—Common.
New Castle—Frequent.
2. *ASCLEPIAS DECUMBENS* L. M. p. 741. Dry fields. Summer.
Lancaster—(P.). *Northampton*—(P.).
New Jersey—Frequent.
3. *ASCLEPIAS LANCEOLATA* Walt. M. p. 741. Wet pine-barrens. Summer.
Cape May—Anglesea (C.), Cape May (Cr.) (He.) (Te.). *Ocean*—
 Forked River (Br.), Point Pleasant (Br.) (Te.), Manahawken (C.).
4. *ASCLEPIAS RUBRA* L. M. p. 742. Moist soil. Early summer.
Philadelphia—Chestnut Hill (Je.). *Bucks*—Bristol (Fr.). *Montgomery*—Edge Hill (Me.) (St.). *Delaware*—Upper Darby (Fu.), Lansdowne
 (Pe.), near Clifton (B. Sm.). *Chester*—(P.). *Lancaster*—Smithville
 (Ca.).
New Jersey—Common.
New Castle—Thompson's, Moore's, etc.
5. *ASCLEPIAS PURPURASCENS* L. *Purple Milkweed*. M. p. 742. Dry
 ground. Summer.
6. *ASCLEPIAS INCARNATA* L. *Swamp Milkweed*. M. p. 742. Swamps.
 Summer.
7. *ASCLEPIAS FULCHRA* Ehrh. M. p. 742. Moist fields and swamps. Sum-
 mer.
8. *ASCLEPIAS AMPLEXICAULIS* J. E. Smith. M. p. 742. Sandy woods and
 fields. Summer.
Philadelphia—Wissahickon (Je.). *Bucks*—Tullytown (Cr.). *Delaware*
 —Tinicum, Swarthmore (Pr.). *Chester*—W. Bradford Twp. (St.). *Lan-*
caster—(P.).
New Jersey—General.
New Castle—Scarce.
9. *ASCLEPIAS EXALTATA* (L.) Muhl. *Poke Milkweed*. M. p. 743. Moist
 copses. Summer.
Philadelphia—Wissahickon and Fairmount Park, Wister (Re.). *Bucks*
 —Near Sellersville (Fr.), Bycot (Ja.) (U. C. S.), New Hope (Sts.),
 Kintnersville (VP.). *Montgomery*—Green Lane (Br.), Shannonville
 (Cr.), Walnut Hill (Ja.). *Delaware*—Darby, Crum and Ridley Creeks
 (Fu.), Lansdowne (Pe.), Swarthmore (Pr.), Conecord (W. Tr.), Walling-
 ford (Wn.). *Chester*—W. Bradford Twp. (St.), Paoli (Te.). *Lancaster*
 —York Furnace (St.). *Berks*—Hamburg, Reading (Wn.). *Lehigh*—
 Low Hill (Kr.). *Northampton*—Pen Argyl (Li.). *Dauphin*—Steelton
 (Wn.).
Burlington—Moorestown (C.). *Atlantic*—Egg Harbor (Le.).
New Castle—General but not common.
10. *ASCLEPIAS VARIEGATA* L. M. p. 743. Dry woods and thickets. Summer.
Philadelphia—Germantown (Br.). *Bucks*—Buckingham, Solebury
 (Ws.). *Montgomery*—Willow Grove (VP.). *Delaware*—(P.). *Chester*
 —(P.). *Lancaster*—(P.). *Northampton*—(P.).
 * *Burlington*—Burlington, Medford (Br.), Moorestown, Birmingham (C.).
Camden—Camden (C.). *Gloucester*—Mickleton (C.). *Cumberland*—

Vineland (C.). *Atlantic*—Hammonton (C.). *Monmouth*—Smithville (C.). *Mercer*—Princeton (C.). *Middlesex*—South Amboy (C.). *Somerset*—Peapack (C.).

11. *ASCLEPIAS QUADRIFOLIA* Jacq. M. p. 743. Dry woods and hills. Early summer.
12. *ASCLEPIAS SYRIACA* L. *Common Milkweed*. M. p. 743. Fields and waste places. Summer.
13. *ASCLEPIAS VERTICILLATA* L. M. p. 744. Dry fields and hills. Summer.
Philadelphia—Wissahickon (Me.). *Bucks*—Nockamixon (Fr.). *Delaware*—Barrens of Middletown, Williamson (Cr.), Tinicum Twp. (Fr.), Media (Pr.), Elwyn (U. C. S.), Glen Riddle (St.), Castle Rock (VP.), Cheyney (Ws.). *Chester*—Westtown (Ha.) (Le.), near West Chester (Sa.). *Lancaster*—(P.). *Lehigh*—Unionville (Kr.). *Northampton*—(P.).
Burlington—Medford (Br.), Birmingham (C.), Oliphant's Mills (Wa.). *Camden*—Berlin (Br.), Kaighn's Point (C.). *Gloucester*—Glassboro, Clarksboro (C.), near Mickleton (He.), Swedesboro (Li.). *Cumberland*—Millville (Je.), Bridgeton (C.). *Cape May*—Tuckahoe (St.). *Monmouth*—Holmdel, Red Bank, Leedsville, Freehold (C.).
New Castle—Serpentine Barrens, Brown's, Dixon's, Commons.

2. ACERATES ELL.

1. *ACERATES VIRIDIFLORA* (Raf.) Eaton. *Green Milkweed*. M. p. 746. Dry soil. Summer.
Philadelphia—East of George's Hill Reservoir (Mac.). *Bucks*—Sellersville (Fr.). *Montgomery*—Shannonville (Cr.), Sumneytown (VP.). *Delaware*—Swarthmore, Williamson, Media, Dr. Geo. Smith (Fu.), Glen Riddle (Le.) (St.), Crum Creek, Bethel (Sch.), Concord (W. Tr.). *Chester*—(P.). *Lancaster*—(P.). *Berks*—Monocacy (Me.). *Northampton*—Easton, Porter (B. C.).
Hunterdon—Barbertown, Kingwood, High Bridge, Holland (C.), Lambertville (Ws.). *Monmouth*—Black's Mills (C.). *Mercer*—Pennington (C.). *Middlesex*—Franklin Park (C.). *Somerset*—Pleasant Plains (C.).
New Castle—Newark, Kilvington, Mill Creek, Michener, Centerville, Oakhill, Stanton, Commons; McKee's, Iron Hill.

- 1a. *ACERATES VIRIDIFLORA IVESII* Britton. M. p. 746. Range of type. Summer.
Philadelphia—East of George's Hill Reservoir (Mac.). *Bucks*—Sellersville (Fr.).

3. CYNANCHUM L.

1. *CYNANCHUM NIGRUM* (L.) Pers. *Black Swallowwort*. M. p. 747. Escaped from gardens. Summer.
Philadelphia—Bartram's Garden, Woodlands Cemetery (Te.), below Gray's Ferry (Wn.). *Delaware*—Media (Gi.), Darby Creek and Bryn Mawr Avenue (Le.), escaped from Painters' Arboretum (S. Tr.), Middletown (W. Tr.).

4. VINCETOXICUM WALT.

1. VINCETOXICUM OBLIQUUM (Jacq.) Britton. M. p. 748. Thickets. Summer.

Philadelphia—Fairmount Park, Manayunk, Dr. J. B. Brinton (He.); Belmont (Te.), mouth of Wissahickon, not seen recently (Wn.). *Montgomery*—Lafayette, Ivy Rock (Wn.). *Delaware*—(P.). *Chester*—Greentree (Te.), Valley Forge (VP.). *Lancaster*—(P.).

PERIPLOCA GRÆCA L. Cultivated.

Philadelphia—Byberry, Mart. (B. C.). *Delaware*—Painters' Arboretum (Fu.).

Order 5. POLEMONIALES.

Corolla regular (irregular in *Echium* of Boraginaceae).

Ovary not 4-lobed, the carpels not separating as distinct nutlets at maturity.

Ovary 2-celled, rarely 3-4-celled; style 1, entire, 2-cleft or 2-parted; mostly twining vines.

Leaves normal.

Fam. 1. *Convolvulaceae*.

White or yellowish parasitic vines, the leaves reduced to minute scales.

Fam. 2. *Cuscutaceae*.

Ovary 3-celled; stigmas 3, linear; herbs, not twining.

Fam. 3. *Polemoniaceae*.

Ovary 1-celled; style 1-2-lobed or parted; herbs, not twining.

Fam. 4. *Hydrophyllaceae*.

Ovary deeply 4-lobed around the style, or not lobed (*Heliotropium*); carpels separating as nutlets.

Fam. 5. *Boraginaceae*.

Corolla irregular, more or less 2-lipped (regular in *Solanaceae*, *Mentha* and *Lycopus*, and nearly or quite so in *Verbena*).

Carpels 1-2-seeded.

Ovary not lobed, 2-4-celled, the style apical; carpels separating into 1-seeded nutlets.

Fam. 6. *Verbenaceae*.

Ovary 4-lobed around the style, the lobes ripening into 1-seeded nutlets.

Fam. 7. *Labiatae*.

Carpels several-many-seeded (2-seeded in some *Acanthaceae*).

Fruit a berry, or more commonly a capsule, which is 1-2-celled, 2-valved, circumscissile, or irregularly bursting, not elastically dehiscent.

Placentae axile.

Ovary 2-celled, or rarely 3-5-celled.

Flowers regular; fertile stamens 5 (4 in *Petunia*); fruit a berry or capsule.

Fam. 8. *Solanaceae*.

Flowers more or less irregular; fertile stamens 2 or 4 (5 in *Verbascum*); fruit a capsule.

Fam. 9. *Scrophulariaceae*.

Ovary 1-celled; marsh or aquatic herbs with flowers on scapes.

Fam. 10. *Lentibulariaceae*.

Placentae parietal.

Herbs, parasitic on the roots of other plants, the leaves reduced to scales, not green; ovary 1-celled.

Fam. 11. *Orobanchaceae*.

Trees, vines, shrubs, or herbs, the foliage normal.

Trees, shrubs, or woody vines; capsule 2-celled; seeds winged.

Fam. 12. *Bignoniaceae*.

Opposite-leaved herbs; capsule 1-celled; seeds wingless.

Fam. 13. *Martyniaceae*.

Capsule completely 2-celled, elastically loculicidally dehiscent; opposite-leaved herbs; placentae axile. Fam. 14. *Acanthaceae*.
Ovary and fruit 1-celled with 1 erect orthotropous ovule and seed; herb with spicate flowers and reflexed fruits. Fam. 15. *Phrymaceae*.

Family 1. **CONVOLVULACEAE** Vent. **Morning-glory Family.**

Style 2-cleft or 2-parted.

1. *Breweria*.

Style entire up to the stigma.

Stigma or stigmas capitate or globose.

Corolla salverform; stamens and style exerted.

2. *Quamoclit*.

Corolla funnelform or campanulate; stamens and style included.

3. *Ipomoea*.

Stigmas 2, filiform to oblong.

4. *Convolvulus*.

1. **BREWERIA** R. Br.

1. **BREWERIA PICKERINGII** (M. A. Curtis) A. Gray. M. p. 750. Dry pine-barrens. Summer.

Burlington—Atsion, Quaker Bridge (C.). *Atlantic*—Along Little Egg Harbor River (C.), Pleasant Mills on the Mullica River, Dr. J. B. Brinton (Hc.).

2. **QUAMOCLIT** Moench.

1. **QUAMOCLIT COCCINEA** (L.) Moench. *Small Red Morning Glory*. M. p. 751. Waste and cultivated ground. Escaped. Summer and fall.

3. **IPOMOEA** L. **MORNING GLORY.**

Ovary 2-celled (rarely 4-celled); stigma entire or 2-lobed.

Perennial from an enormous root; corolla 5-8 cm. long.

1. *I. pandurata*.

Annual; roots fibrous; corolla 8-20 mm. long, white.

2. *I. lacunosa*.

Ovary 3-celled; stigmas 3; leaves cordate; annuals.

Leaves entire; corolla 5-7 cm. long.

3. *I. purpurea*.

Leaves deeply 3-lobed, corolla 2.5-4 cm. long.

4. *I. hederacea*.

1. **IPOMOEA PANDURATA** (L.) Meyer. *Wild Potato-vine, Man-of-the-Earth*. M. p. 752. Dry ground. Summer.

2. **IPOMOEA LACUNOSA** L. M. p. 752. Moist soil. Summer.

Lancaster—York Furnace.

Camden—Petty's Island, Dr. Geo. Smith (Fu.). *Gloucester*—Westville, one plant (Wn.). *Monmouth*—Cliffwood (C.).

3. **IPOMOEA PURPUREA** (L.) Roth. *Common Morning Glory*. M. p. 752. Waste places. Escaped. Summer.

4. **IPOMOEA HEDERACEA** Jacq. M. p. 752. Fields and waste places. Summer.

IPOMOEA SAGITTATA Gray. Ballast.

Philadelphia—Below Old Navy Yard, Mart. (B. C.).

4. **CONVOLVULUS** L.

Calyx with 2 large bracts at the base, which enclose it.

Stems trailing or climbing.

1. *C. sepium*.

Stem erect or ascending; flowers white; bracts not cordate.

2. *C. spithameus*.

Calyx not bracted; peduncle bracted at the summit.

3. *C. arvensis*.

1. CONVULVULUS SEPIUM L. *Hedge Bindweed*. M. p. 753. Moist fields and thickets. Summer.
2. CONVULVULUS SPITHAMAEUS L. *Upright Bindweed*. M. p. 753. Dry, sandy or rocky soil. Summer.
Philadelphia—Byberry, Mart. (B. C.), Germantown (St.). *Bucks*—Rock Hill (Cr.), Pipersville, Sellersville, Pineville (Ws.), Glenlake (Ke.). *Delaware*—Near Haverford (Mac.), Lansdowne (Pe.), Swarthmore (Pr.), Middletown (B. Sm.), Concord (W. Tr.). *Chester*—(P.). *Lancaster*—(P.). *Lehigh*—East of Allentown (Kr.). *Northampton*—(P.).
Salem—Riddleton (Li.) (Mac.) (Wn.). *Cumberland*—Vineland (C.). *Somerset*—Peapack, Rocky Hill (C.). *Hunterdon*—Rosemont, Lambertville (C.).
New Castle—General and frequent.
3. CONVULVULUS ARVENSIS L. *Small Bindweed*. M. p. 753. Fields and waste places. Summer.

Family 2. CUSCUTACEAE Dumort. Dodder Family.

1. CUSCUTA L. DODDER.

Corolla-scales crenulate; stigmas slender; capsule circumscissile.

1. *C. Epilinum*.

Corolla-scales fringed; stigmas capitate; capsule indehiscent.

Sepals united below into a gamosepalous calyx.

Flowers very nearly sessile; corolla persistent at the base of the capsule.

Corolla-scales ovate, fringed all around; calyx-lobes obtuse.

2. *C. arvensis*.

Corolla-scales abortive, or of a few processes; calyx-lobes acutish.

3. *C. Polygonorum*.

Flowers distinctly pedicelled; corolla enclosing or capping the capsule, or at length deciduous.

Scales small, irregularly fringed; capsule depressed-globose.

4. *C. Cephalanthi*.

Scales long, fringed mainly above; capsule pointed.

5. *C. Gronovii*.

Sepals separate, subtended by similar bracts.

6. *C. compacta*.

1. CUSCUTA EPILINUM Weihe. M. p. 754. Flax fields. Summer.
Bucks—Plumsteadville (Fr.). *Chester*—(P.). *Lancaster*—(P.).
New Castle—Centerville, Commons.
2. CUSCUTA ARVENSIS Beyrich. M. p. 755. Rather dry soil on various low plants. Summer.
Philadelphia—Fairmount Park (Wn.). *Bucks*—Sellersville (Fr.), Kintnersville (P.). *Lancaster*—(P.).
Gloucester—Swedesboro (Li.). *Cape May*—Cape May, Mart. (B. C.).
Atlantic—Hammononton (C.), Egg Harbor (Le.). *Monmouth*—Shark River (C.). *Mercer*—Trenton (C.). *Hunterdon*—Rosemont (C.).
New Castle—On Aster, Trifolium, etc. Becoming common.
3. CUSCUTA POLYGONORUM Engelm. M. p. 755. Wet places, often on Polygonum. Summer.
Lancaster—Safe Harbor (Ca.). *Dauphin*—(P.).
New Castle—Cherry Island, Hamburg Cove.

4. *CUSCUTA CERNALANTHI* Engelm. M. p. 755. On shrubs and tall herbs. Summer.
Lancaster—Shock's Mills (Ca.), York Furnace (Cr.). *Northampton*—Easton, Porter (B. C.). *Dauphin*—Harrisburg, Porter (B. C.).
Burlington—Quaker Bridge (C.). *Gloucester*—Swedesboro (Li.).
Ocean—Toms River (C.).
5. *CUSCUTA GRONOVII* Willd. M. p. 755. On herbs and low shrubs. Summer.
6. *CUSCUTA COMPACTA* Juss. M. p. 756. Damp woods on shrubs. Summer.
Bucks—Nockamixon (P.). *Delaware*—Tinicum (P.).
Burlington—Pemberton (Te.). *Camden*—Camden, Mart. (B. C.),
Laurel Springs (Gi.), Ancora (Te.). *Gloucester*—Swedesboro (Li.),
Westville (Wn.). *Salem*—Woodstown, common (Wa.). *Atlantic*—New
Germany (Fr.), Hammonton (Pr.), May's Landing (Te.). *Middlesex*—
Metuchen (C.).
New Castle—On Benzoin and *Cephalanthus*.

Family 3. POLEMONIACEAE DC. Phlox Family.

Calyx distended and at length ruptured by the ripening capsule.

Leaves opposite, entire.

1. *Phlox*.

Leaves alternate, pinnately divided.

2. *Gilia*.

Calyx not distended nor ruptured by the capsule; leaves alternate.

3. *Polemonium*.

1. PHLOX L.

Leaves flat, ovate, oblong, lanceolate or linear.

Cymes paniced; flowers short-pedicelled or sessile.

Calyx-teeth subulate.

1. *P. paniculata*.

Calyx-teeth lanceolate, acute; leaves lanceolate to ovate, acuminate.

2. *P. maculata*.

Cymes corymbose, simple, or flowers scattered.

Stems erect or ascending; no prostrate, sterile shoots.

3. *P. pilosa*.

Stems ascending or reclining; sterile shoots prostrate.

4. *P. divaricata*.

Leaves subulate, fascicled or crowded; plants low.

5. *P. subulata*.

1. *PHLOX PANICULATA* L. *Garden Phlox*. M. p. 757. Woods and thickets; escaped. Summer.

Philadelphia—Wissahickon (Je.), Bartram's Garden (Te.). *Bucks*—
Plumsteadville (Fr.). *Montgomery*—Shannonville (Cr.). *Delaware*—
Lansdowne (Pe.). *Lancaster*—York Furnace (Ja.) (Ka.) (Li.). *North-*
ampton—(P.). *Dauphin*—(P.).

New Jersey—Frequent.

2. *PHLOX MACULATA* L. *Wild Sweet-William*. M. p. 757. Rich woodlands and along streams. Summer.

3. *PHLOX PILOSA* L. M. p. 758. Dry or sandy woods. Spring.

Bucks—Nockamixon, Hilltown (Fr.). *Montgomery*—Sumneytown
(VP.). *Delaware*—Williamson (Cr.) (Pr.), Upper Providence (Fu.)
(B. Sm.), Chrome Run, Middletown (B. Sm.), Glen Riddle (Sts.), Edg-
mont (W. Tr.). *Chester*—Westtown (Ha.). *Lancaster*—(P.). *Lehigh*—
(Kr.). *Northampton*—(P.).

Burlington — Burlington, Moorestown (C.). *Gloucester* — Woodbury (C.). *Mercer* — Princeton (C.). *Middlesex* — New Brunswick (C.). *Hunterdon* — Lambertville, Rosemont, Hopewell (C.).

New Castle — General but rare.

4. *PHLOX DIVARICATA* L. *Wild Blue Phlox*. M. p. 758. Rocky, damp woods. Spring.

Chester — (P.). *Lancaster* — York Furnace. *Dauphin* — Steelton (Wn.).

5. *PHILOX SUBULATA* L. *Ground or Moss Pink*. M. p. 759. Dry or rocky soil. Spring.

Bucks — Bedminster (Fr.), Narrowsville (Ja.) (Mac.), Neshaminy, Doylestown (VP.), Lahaska (Ws.). *Montgomery* — Shannonville (Cr.), Arcola (Mar.). *Delaware* — Middletown (Fu.) (B. Sm.), Media (Gi.), Elwyn (Pe.), Wawa (Sa.), Ridley Creek above Media, Chrome Run (B. Sm.), Pink Hill near Lima (Wn.). *Chester* — Phoenixville, Mart. (B. C.), Birmingham (Le.) (W. Tr.), West Chester (Pr.). *Lancaster* — (P.). *Lehigh* — Low Hill (Kr.). *Berks* — Reading (Me.). *Northampton* — (P.).

Burlington — Vincentown, Evansville, Birmingham, Moorestown (C.), Cinnaminson (Sts.). *Camden* — Near Merchantville (Ha.), Blackwood (Je.) (Re.), East Camden (Te.). *Gloucester* — Mickleton (Ha.), Almonesson (Je.), Swedesboro (Li.). *Hunterdon* — Milford, Rosemont (C.), Lambertville (Wa.). *Monmouth* — Red Bank (C.). *Mercer* — Trenton (C.). *Middlesex* — New Brunswick (C.).

2. *GILIA* R. & P.

1. *GILIA RUBRA* (L.) Heller. M. p. 760. Cultivated and escaped.
Cumberland — Manumuskine.

3. *POLEMONIUM* L.

1. *POLEMONIUM REPTANS* L. *Greek Valerian*. M. p. 761. Woods. Spring.
Pennsylvania — General.
Camden — Between Camden and Haddonfield (C.). *Mercer* — Bordentown (C.).

Family 4. *HYDROPHYLLACEAE* Lindl. *Water-leaf Family*.

Corolla-lobes convolute in the bud; placentae dilated.

Stamens exserted.

Stamens not exserted.

Corolla-lobes imbricated in the bud; placentae narrow.

1. *Hydrophyllum*.

2. *Macrocalyx*.

3. *Phacelia*.

1. *HYDROPHYLLUM* L. *WATER-LEAF*.

Leaves, at least the lower, pinnatifid or pinnately divided.

Calyx not appendaged in the sinuses or scarcely so.

1. *H. Virginicum*.

Calyx with a reflexed appendage in each sinus.

2. *H. appendiculatum*.

Leaves palmately 5-9-lobed.

3. *H. Canadense*.

1. *HYDROPHYLLUM VIRGINICUM* L. M. p. 763. Woods. Summer.

2. *HYDROPHYLLUM APPENDICULATUM* Michx. M. p. 763. Woods. Summer.
Lancaster — (P.).

3. *HYDROPHYLLUM CANADENSE* L. M. p. 763. Woods. Summer.

Bucks—Nockamixon. *Lancaster*—Peach Bottom (Ca.), York Furnace (Cr.) (Le.), island in Susquehanna below Columbia (Pr.).

2. *MACROCALYX* Trew.1. *MACROCALYX NYCTELEA* (L.) Kuntze. M. p. 764. Moist soil. Spring.

Philadelphia—Girard Point (Ja.). *Bucks*—Opposite Trenton (P.), *Lancaster*—Safe Harbor, York Furnace (Pr.).

3. *PHACELIA* Juss.

Corolla with entire or merely crenulate lobes.

1. *P. dubia*.

Corolla with fimbriate lobes.

2. *P. Purshii*.

1. *PHACELIA DUBIA* (L.) Small. M. p. 765. Shaded banks. Spring.

Bucks—Near Telford (Fr.). *Lancaster*—York Furnace, Columbia, Porter (B. C.).

2. *PHACELIA PURSHII* Buckl. M. p. 765. Moist woods or thickets. Spring.

Montgomery—Walnut Hill (VP.). *Lancaster*—(P.).

Family 5. **BORAGINACEAE** Lindl. **Borage Family.**

Ovary entire or 2-4-grooved; style terminal.

1. *Heliotropium*.

Ovary 4-divided or deeply 4-lobed, the style arising from the center.

Flowers regular.

Nutlets armed with barbed prickles.

Nutlets spreading or divergent, covered by the prickles.

2. *Cynoglossum*.

Nutlets erect or incurved, the prickles on their backs or margins.

3. *Lappula*.

Nutlets unarmed.

Nutlets attached laterally to the receptacle, sometimes just above their bases.

Fruiting calyx not greatly enlarged nor membranous.

4. *Mertensia*.

Fruiting calyx much enlarged, membranous, veiny.

5. *Asperugo*.

Nutlets attached to the receptacle by their very bases.

Scar of the attachment small, flat.

Corolla salverform or funnelform, its lobes rounded or spreading.

Racemes not bracted; corolla-tube short.

6. *Myosotis*.

Racemes bracted; corolla-tube cylindric, usually slender.

7. *Lithospermum*.

Corolla tubular, its lobes erect, acute.

8. *Onosmodium*.

Scar of attachment large, concave.

9. *Symphytum*.

Flowers irregular.

Stamens included, throat of the corolla closed by scales.

10. *Lycopsis*.

Stamens exserted; throat of the corolla dilated, open.

11. *Echium*.

1. *HELIOTROPIUM* L. *HELIOTROPE*.

Fruit 4-lobed, each lobe separating as a 1-seeded nutlet.

Plant rough-puberulent; leaves oval.

Glabrous, fleshy; leaves linear or spatulate.

1. *H. Europaeum*.

Fruit 2-lobed or of 2 carpels.

2. *H. Curassavicum*.

3. *H. Indicum*.

1. *HELIOTROPIMUM EUROPAEUM* L. M. p. 767. Waste places. Summer.
Philadelphia—Greenwich Point (Te.).
Camden—Kaighn's Point.
2. *HELIOTROPIMUM CURASSAVICUM* L. M. p. 767. Ballast. Summer.
Philadelphia—Philadelphia (P.). *Bucks*—(P.).
Camden—Kaighn's Point.
3. *HELIOTROPIMUM INDICUM* L. M. p. 768. Ballast. Summer.
Philadelphia—Philadelphia (P.). *Bucks*—(P.).

2. *CYNOGLOSSUM* L.

- Stem leafy to the top; flowers reddish, purple or white; nutlets flat. 1. *C. officinale*.
 Stem leafless above; flowers blue; nutlets convex. 2. *C. Virginicum*.
1. *CYNOGLOSSUM OFFICINALE* L. *Hound's-tongue*. M. p. 768. Waste grounds and pastures. Summer.
Bucks—Rock Hill (Fr.), Quakertown (Ke.), New Hope (Ws.). *Montgomery*—Shannonville (Cr.). *Delaware*—Upper Providences, Edgemont (Fu.), Wawa (Ja.), near Media (B. Sm.), Chad's Ford (Te.), Concord (W. Tr.). *Chester*—Valley Forge' (Je.). *Lancaster*—York Furnace (Ja.) (Mac.). *Berks*—Hamburg (He.) (Ke.), Wernersville (Li.) (Te.), Reading (Wn.). *Northampton*—Pen Argyl (U. C. S.). *Dauphin*—Steelton (Wn.).
Camden—Camden (C.). *Gloucester*—Mickleton (C.). *Monmouth*—Freehold (C.). *Mercer*—Trenton (C.), Princeton (Te.). *Somerset*—Peapack (C.).
New Castle—St. George's. Rare.
 2. *CYNOGLOSSUM VIRGINICUM* L. *Wild Comfrey*. M. p. 768. Open woods. Spring.

3. *LAPPULA* Moench. STICKSEED.

- Racemes bracted; fruiting pedicels not deflexed. 1. *L. Lappula*.
 Racemes bracted only at the base; fruiting pedicels deflexed. 2. *L. Virginiana*.
1. *LAPPULA LAPPULA* (L.) Karst. M. p. 769. Waste places. Summer.
Philadelphia—Girard Point (Ja.), Greenwich Point (Te.).
Camden—Kaighn's Point (Te.). *Monmouth*—Freehold (C.). *Mercer*—Trenton (C.).
New Castle—Ashland, Mrs. H. Phillips.
 2. *LAPPULA VIRGINIANA* (L.) Greene. M. p. 769. Dry woods and thickets. Summer.
Philadelphia—Byberry, Mart. (B. C.). *Bucks*—Rock Hill (Fr.), Neshaminy (Mac.), Solebury Twp. (Ws.). *Delaware*—Lansdowne (Pe.), Wawa (Sa.), Wallingford (Wn.). *Chester*—Westtown (Le.). *Lancaster* (P.). *Berks*—Wernersville (Te.), Reading (Wn.). *Lehigh*—Lower Milford at Buckhorn (Kr.). *Northampton*—Easton, Porter (B. C.). *Dauphin*—Steelton (Wn.).
Gloucester—Near Mickleton (He.), Swedesboro (Li.). *Monmouth*—Freehold (C.).
New Castle—Frequent.

4. MERTENSIA Roth.

1. MERTENSIA VIRGINICA (L.) DC. *Virginian Cowslip, Lungwort, Bluebells.* M. p. 771. Alluvial banks. Spring.

Philadelphia—Wissahickon, West Park near Falls Bridge (Mac.), Shawmont (Sa.). *Bucks*—Yardley (Fr.), shores of Neshaminy (Ws.). *Montgomery*—Conshohocken; E. Diffenbaugh (B. C.), Shannonville (Cr.); Ivy Rock (Ke.), Sumneytown (VP.), Flat Rock Tunnel (Te.). *Delaware*—Chester Creek at Presbyterian Ford (Fu.), Dutton's Mills (Fu.) (S. Tr.), Wawa, Dr. J. B. Brinton (He.), Lansdowne (Pe.), Chad's Ford (Pr.) (Te.), Chester (W. Tr.). *Chester*—Valley Forge (Mac.), West Chester (Sa.). *Lancaster*—Susquehanna Valley (Le.). *Northampton*—(P.).

Burlington—Bordentown, Lumberton (C.). *Monmouth*—Walnford (C.). *Somerset*—Raritan River, New Germantown (C.). *Hunterdon*—Lambertville (C.).

New Castle—Granogue, Mount Cuba, Wooddale.

5. ASPERUGO L.

1. ASPERUGO PROCUMBENS L. M. p. 772. Waste ground and ballast. Summer.

Philadelphia—(P.).

Camden—Camden, railroad yard (Li.).

6. MYOSOTIS L. FORGET-ME-NOT.

Hairs of the calyx all straight; perennial swamp or brook plants.

Calyx-lobes shorter than the tube; corolla 6-8 mm. broad.

1. *M. palustris.*

Calyx-lobes as long as the tube; corolla 4-6 mm. broad.

2. *M. laxa.*

Hairs of the calyx, or some of them, with hooked tips; annuals or biennials.

Fruiting pedicels longer than the calyx.

3. *M. arvensis.*

Fruiting pedicels not longer than the calyx.

Calyx-lobes equal; corolla yellow, changing to violet or blue.

4. *M. versicolor.*

Calyx-lobes unequal; corolla white.

5. *M. Virginica.*

1. MYOSOTIS PALUSTRIS (L.) Lam. M. p. 772. Wet grounds; escaped. Summer.

Philadelphia—Thomas' Wood (Je.), near Bartram's Garden (Mac.). *Bucks*—Tullytown (Ja.). *Montgomery*—Walnut Hill (VP.). *Delaware*—Haverford (Le.), Lansdowne (Pe.), Swarthmore (Pr.) (Ws.), Concord (W. Tr.). *Lehigh*—Deily's, common (Kr.).

Gloucester—Mickleton (He.), Swedesboro (Li.). *Salem*—Woodstown (Wa.).

New Castle—Frequent.

2. MYOSOTIS LAXA Lehm. M. p. 772. Wet places. Early summer.

3. MYOSOTIS ARVENSIS (L.) Lam. M. p. 772. Fields. Summer.

Philadelphia—Greenwich Point (Te.). *Lancaster*—(P.). *Northampton*—Easton, Porter (B. C.).

Atlantic—May's Landing (C.).

4. *MYOSOTIS VERSICOLOR* (Pers.) Reichenb. M. p. 773. Fields and roadsides. Summer.

Delaware—Darby near Cobb's Creek, A. H. Smith (B. Sm.), Tinicum (P.).

New Castle—Fields between Holly Oak and Edgemoor, Canby.

5. *MYOSOTIS VIRGINICA* (L.) B. S. P. M. p. 773. Dry ground. Summer.

7. *LITHOSPERMUM* L. GROMWELL.

Corolla white or yellowish, its tube shorter than, or equalling, the calyx; flowers distant.

Nutlets brown, wrinkled or pitted; annual or biennial. 1. *L. arvense*.

Nutlets white, smooth and shining; perennials. 2. *L. latifolium*.

Corolla bright yellow, its tube much longer than the calyx; flowers dense.

3. *L. canescens*.

1. *LITHOSPERMUM ARVENSE* L. *Corn Gromwell*. M. p. 773. Fields and waste places. Spring.

2. *LITHOSPERMUM LATIFOLIUM* Michx. M. p. 774. In dry thickets and fields. Spring.

Lancaster—(P.). *Berks*—(P.).

3. *LITHOSPERMUM CANESCENS* (Michx.) Lehm. M. p. 774. Dry soil. Spring. *Chester*—(P.). *Lancaster*—(P.). *Northampton*—(P.).

8. *ONOSMODIUM* Michx.

1. *ONOSMODIUM VIRGINIANUM* (L.) DC. *False Gromwell*. M. p. 775. Banks and hillsides. Summer.

Bucks—Near Point Pleasant (Fr.). *Delaware*—Sandy Bank, Upper Providence, John Cassin (Fu.). *Chester*—(P.). *Lancaster*—(P.).

Burlington—Birmingham (C.), Rancocas Creek, 1 mile above mouth, Mart. (B. C.). *Camden*—Clementon (Cr.) (Wn.). *Gloucester*—Iona (C.), near Woodbury (He.) (Li.), one specimen at Westville (Wn.). *Atlantic*—Hammonton (Cr.). *Monmouth*—Brown's Point, Keyport (C.). *Middlesex*—Chesquakes Creek (C.). *Hunterdon*—Raven Rock, Bull's Island, Lambertville (C.).

New Castle—Brandywine Hills, etc.

9. *SYMPHYTUM* L.

1. *SYMPHYTUM OFFICINALE* L. *Comfrey*. M. p. 775. Waste places. Summer.

Philadelphia—Byberry, Mart. (B. C.). *Bucks*—Sellersville (Fr.). *Montgomery*—Bryn Mawr (Gi.). *Delaware*—Wawa, Concord (W. Tr.). *Lancaster*—(P.). *Lehigh*—Coplay (Kr.). *Northampton*—(P.). *Dauphin*—Harrisburg (Wn.).

New Jersey—Frequent.

New Castle—Greenbank, Commons.

10. *LYCOPSIS* L. BUGLOSS.

1. *LYCOPSIS ARVENSIS* L. M. p. 776. Fields and waste places. Summer.

Philadelphia—Greenwich Point (Te.).

Camden—Kaighn's Point (Ja.) (Wn.).

11. ECHIUM L.

1. *ECHIUM VULGARE* L. *Viper's Bugloss, Blue-weed.* M. p. 776. Fields and waste places. Early summer.

Family 6. VERBENACEAE J. St. Hil. *Vervain Family.*

- Corolla-limb 5-lobed, regular or nearly so; nutlets 4. 1. *Verbena*.
Corolla-limb 4-lobed, 2-lipped; nutlets 2. 2. *Lippia*.

1. VERBENA L. VERVAIN.

Spikes filiform or slender; bracts shorter than the flowers.

Spikes filiform; fruit scattered; corolla usually white.

Leaves incised or pinnatifid; diffuse annual; fruit short.

1. *V. officinalis*.

Leaves serrate (rarely incised); erect perennial; fruit oblong.

2. *V. urticifolia*.

Spikes slender; fruits densely imbricated; corolla blue.

Plants glabrous or sparingly rough-pubescent; corolla 8-10 mm. long.

Leaves lanceolate, acuminate, petioled. 3. *V. hastata*.

Leaves linear to spatulate-lanceolate, mostly obtuse and sessile.

4. *V. angustifolia*.

Plants densely soft-pubescent; corolla 8-10 mm. long.

5. *V. stricta*.

Spikes thick, dense; bracts longer than the flowers. 6. *V. bracteosa*.

1. *VERBENA OFFICINALIS* L. *Vervain.* M. p. 777. Waste and cultivated ground. Summer.

Philadelphia—Navy Yard, *Mart.* (B. C.), Germantown (Me.), Greenwich Point (Te.). *Montgomery*—Shannonville (Cr.). *Lancaster*—York Furnace (Mac.), Peach Bottom (Pr.). *Dauphin*—(P.).

Camden—Kaighn's Point. *Salem*—Woodstown (Wa.). *Atlantic*—Pleasant Mills, *E. A. Bau* (B. C.), May's Landing (He.) (Wn.). *Mercer*—Roadsides, frequent (C.).

New Castle—Streets of Wilmington. Scarce.

2. *VERBENA URTICIFOLIA* L. M. p. 777. Fields and waste places. Summer.

3. *VERBENA HASTATA* L. *Blue Vervain.* M. p. 778. Waste grounds and meadows. Summer.

4. *VERBENA ANGUSTIFOLIA* Michx. M. p. 778. Dry or sandy ground. Summer.

Bucks—Three-mile Run (Fr.), Pineville, Wrightstown (Ws.). *Montgomery*—Whitemarsh (Me.). *Delaware*—Near Media (Fu.), Marple (Mac.), Lansdowne (Pe.). *Chester*—Westtown (Le.). *Lancaster*—York Furnace (Cr.) (Mac.), Fites' Eddy (W. Tr.). *Northampton*—(P.). *Dauphin*—Paxtang (Mar.), Steelton (Wn.).

Burlington—New Lisbon (Te.). *Camden*—Gloucester, Sicklerville, Dr. J. B. Brinton (B. C.), Winslow Junction (Ke.). *Gloucester*—Near Mickleton (He.), Swedesboro (Li.). *Atlantic*—Hammonton (Cr.), Absecon (Wn.). *Somerset*—Peapack (C.). *Hunterdon*—Sergeantville Rosemont (C.).

New Castle—Centerville, Commons; Wilmington.

5. *VERBENA STRICTA* Vent. M. p. 778. Dry soil. Summer.

Lancaster—(P.).

New Castle—Jason Davis, Newcastle Hd.

6. *VERBENA BRACTEOSA* Michx. M. p. 778. Waste places. Summer.
Philadelphia — Greenwich Point (Te.). *Lancaster* — Benton Station,
 very rare (Ca.), Susquehanna River (Pr.).
 * *Camden* — Kaighn's Point, E. Diffenbaugh (B. C.) (Ja.).

2. *LIPPIA* L.

1. *LIPPIA LANCEOLATA* Michx. *Fog-fruit*. M. p. 779. Moist soil. Summer.
Philadelphia — Philadelphia Navy Yard, I. Burk (Fu.). *Lancaster* —
 York Furnace, Peach Bottom (Pr.). *Dauphin* — Above Harrisburg (Wn.).
Camden — Ballast (C.). *Cape May* — Wildwood, Anglesea.

Family 7. *LABIATAE* B. Juss. *Mint Family*.

Ovary 4-lobed, the style not basal; the nutlets laterally attached.
 Corolla-limb very irregular, apparently 1-lipped, or the other lip short;
 stamens exserted. 1. *Teucrium*.

Corolla-limb nearly equally 5-lobed.

Corolla-lobes spreading; stamens short-exserted. 2. *Isanthus*.
 Corolla-lobes declined; stamens long-exserted. 3. *Trichostema*.

Ovary 4-parted, the style basal; nutlets basally attached.

Calyx with a protuberance on the upper side. 4. *Scutellaria*.
 Calyx not gibbous on the upper side.

Stamens and style very short, included in the corolla-tube. 5. *Marrubium*...

Stamens longer, not included in the corolla-tube.

*Corolla strongly 2-lipped; lips unlike, the upper concave.

†Anther-bearing stamens 4.

Posterior (upper) pair of stamens longer than the anterior.

Anther-sacs parallel or nearly so. 6. *Agastache*.

Anther-sacs divergent.

Calyx tubular, nearly equally 5-toothed, not 2-lipped; plant
 erect. 7. *Nepeta*.

Calyx distinctly 2-lipped, or unequally 5-toothed. 8. *Glechoma*.

Posterior pair of stamens shorter than the anterior.

Calyx distinctly 2-lipped, closed in fruit. 9. *Prunella*.

Calyx 3-10-toothed, not distinctly 2-lipped, open in fruit.

Calyx membranous, inflated in fruit, faintly nerved. 10. *Physostegia*.

Calyx not membranous, not inflated in fruit, distinctly 5-10-
 nerved.

Anther-sacs transversely 2-valved. 11. *Galeopsis*.

Anther-sacs not transversely 2-valved, parallel or divergent.

Nutlets 3-sided, truncate.

Calyx-teeth spiny-tipped. 12. *Leonurus*.

Calyx-teeth not spiny-tipped. 13. *Lamium*.

Nutlets ovoid, rounded above.

Calyx with a spreading 5-toothed limb.

14. *Ballota*.

Calyx-limb not spreading.

15. *Stachys*.

††Anther-bearing stamens 2.

Connective of the anther very long, bearing a perfect sac at one end
 and a rudimentary one, or none, at the other. 16. *Salvia*.

Connective very short, the anther-sacs confluent.

Calyx tubular, 15-nerved, equally 5-toothed. 17. *Morarda*.

Calyx ovoid-tubular, 13-nerved, 2-lipped. 18. *Blephilla*.

**Corolla 2-lipped or regular; upper lip, when present, flat, or only slightly concave.

†Flowers in axillary whorls or clusters, or these forming terminal spikes.

Corolla 2-lipped.

Stamens curved, often converging, or ascending under the upper lip of the corolla.

Anther-bearing stamens 2.

19. *Hedeoma*.

Anther-bearing stamens 4.

Corolla-tube upwardly curved, exserted.

20. *Melissa*.

Corolla-tube straight.

21. *Clinopodium*.

Stamens straight, often diverging.

Calyx 15-nerved.

22. *Hyssopus*.

Calyx 10-13-nerved.

Anther-bearing stamens 4.

Anther-sacs divergent.

Calyx equally 5-toothed; erect herbs.

23. *Origanum*.

Calyx 2-lipped; creeping herbs.

25. *Thymus*.

Anther-sacs parallel.

24. *Koelia*.

Anther-bearing stamens 2.

26. *Cunila*.

Corolla regular, 4-5-lobed.

Anther-bearing stamens 2; plants not aromatic.

27. *Lycopus*.

Anther-bearing stamens 4; aromatic, fragrant herbs.

28. *Mentha*.

††Flowers in terminal, panicked racemes or spikes; corolla 2-lipped.

Anther-bearing stamens 2; lower lip of the corolla long, fimbriate; native.

29. *Collinsonia*.

Anther-bearing stamens 4; lower lip of corolla not fimbriate; introduced.

30. *Perilla*.

1. TEUCRIUM L. GERMANDER.

Calyx canescent, the upper lobes obtuse.

1. *T. Canadense*.

Calyx villous, the upper lobes acutish.

2. *T. occidentale*.

1. TEUCRIUM CANADENSE L. *American Germander, Wood Sage*. M. p. 782.

Low grounds. Summer.

2. TEUCRIUM OCCIDENTALE A. Gray. M. p. 782. Moist soil. Summer.

Philadelphia—(P.).

2. ISANTHUS Michx.

1. ISANTHUS BRACHIATUS (L.) B. S. P. *False Pennyroyal*. M. p. 782.

Sandy soil. Summer.

Philadelphia—Schuylkill above Girard Avenue Bridge (Pr.). *Bucks*—Nockamixon (Fr.), New Hope, Malta Island (Ws.). *Montgomery*—Shannonville (Cr.). *Chester*—Phoenixville, I. Burk (He.). *Lancaster*—York Furnace, Columbia (Wn.). *Dauphin*—(P.).

Monmouth—Freehold (C.). *Mercer*—Above Trenton (C.). *Hunterdon*—Tumble and Raven Rock (C.).

3. TRICHOSTEMA L. BLUE-CURLS. BASTARD PENNYROYAL.

Leaves oblong or lanceolate; plant minutely viscid-pubescent.

1. *T. dichotomum*.

Leaves linear; plant puberulent or glabrous.

2. *T. lineare*.

1. TRICHOSTEMA DICHOTOMUM L. M. p. 782. Sandy fields. Summer and fall.

2. *TRICHOSTEMA LINEARE* Nutt. M. p. 782. Sandy fields and dry pine-barrens. Summer.

Philadelphia—On Schuylkill (P.). *Bucks*—Bristol, E. Dittenbough (Fr.).

Burlington—Quaker Bridge (C.). *Camden*—Camden (C.). *Gloucester*—Malaga (C.), Westville (Wn.). *Atlantic*—Egg Harbor (He.). *Cumberland*—Vineland (Ab.). *Mercer*—Lawrence Station (C.).

New Castle—Opposite Riddle's Mill, Canby.

4. *SCUTELLARIA* L. SKULLCAP.

Nutlets wingless, very slightly elevated on the short gynobase.

Flowers 6-10 mm. long, in axillary and sometimes terminal racemes.

1. *S. lateriflora*.

Flowers 12-30 mm. long, in terminal, often paniced, racemes.

Plant glabrous or very nearly so; leaves broad. 2. *S. serrata*.

Plants pubescent, puberulent or pilose.

Leaves, all except the floral, crenate or dentate, broad.

Canescent, not glandular; corolla canescent.

3. *S. incana*.

Densely glandular-pubescent; corolla puberulent.

4. *S. cordifolia*.

Pubescent below, glandular above; corolla nearly glabrous.

5. *S. pilosa*.

Leaves, all except the lowest, entire, narrow. 6. *S. integrifolia*.

Flowers solitary in the axils, or sometimes also in terminal bracted racemes.

Flowers 4-8 mm. long.

7. *S. parvula*.

Flowers 16-26 mm. long.

Leaves ovate, slender-petioled, cordate, obtuse.

8. *S. saxatilis*.

Leaves lanceolate or ovate-lanceolate, nearly sessile, acute.

9. *S. galericulata*.

Nutlets membranous-winged, elevated on the slender gynobase; flowers axillary.

10. *S. nervosa*.

1. *SCUTELLARIA LATERIFLORA* L. *Mad-dog Skullcap*. M. p. 783. Wet places. Summer.

2. *SCUTELLARIA SERRATA* Andr. M. p. 783. Woods. Early summer.
Montgomery—Ivy Rock (Wn.). *Delaware*—Upper Darby, Dr. Geo. Smith (Fu.), Tinicum (Le.), Wawa (Le.) (Mac.), Swarthmore (Pr.) (Ws.); Chester (W. Tr.), Wallingford (Wn.). *Lancaster*—York Furnace (Cr.).

3. *SCUTELLARIA INCANA* Muhl. M. p. 784. Moist woods and thickets. Summer.

Montgomery—Bryn Mawr (Gi.). *Delaware*—Lansdowne (Pe.), Valley of Darby Creek (B. Sm.). *Lancaster*—Peach Bottom (Pr.).

4. *SCUTELLARIA CORDIFOLIA* Muhl. M. p. 784. Woods and thickets. Summer.

Lancaster—(P.). *Dauphin*—(P.).

5. *SCUTELLARIA PILOSA* Michx. M. p. 784. Dry or sterile ground. Summer.

6. *SCUTELLARIA INTEGRIFOLIA* L. *Hyssop Skullcap*. M. p. 784. Fields, woods and thickets. Summer.

7. *SCUTELLARIA PARVULA* Michx. M. p. 784. Moist, sandy soil. Spring and summer.

Bucks—(P.). *Delaware*—On serpentine, Newtown, Dr. Joseph Leidy (P.). *Chester*—(P.). *Lancaster*—(P.). *Northampton*—(P.). *Dauphin*—(P.).

8. *SCUTELLARIA SAXATILIS* Riddell. M. p. 785. Moist, shaded banks. Summer.

New Castle—Brandywine near Wilmington (Le.), above Rockford, Tattall; near Stanton, Dr. Michener. Rare.

9. *SCUTELLARIA GALERICULATA* L. *Marsh Skullcap*. M. p. 785. Swamps and along streams. Summer.

Philadelphia—Byberry, Mart. (B. C.), Girard Point (Ja.), Upper Wissahickon (Je.). *Bucks*—(P.). *Delaware*—Tinicum (Fu.) (B. Sm.), Rifle Range (Wn.). *Chester*—Paoli (U. C. S.). *Lancaster*—(P.). *Northampton*—(P.). *Dauphin*—Steelton (Wn.).

Camden—Cooper's Creek (C.). *Gloucester*—Repaupo (Cr.) (Ja.), near Mickleton (He.), Swedesboro (Li.), Westville (Pr.). *Salem*—Woodstown (Wa.).

10. *SCUTELLARIA NERVOSA* Pursh. M. p. 785. Moist thickets. Summer.

Philadelphia—Byberry, Mart. (B. C.). *Bucks*—Rock Hill (Fr.), Nockamixon (Ws.). *Delaware*—(P.). *Chester*—(P.). *Lancaster*—(P.).

Hunterdon—Near Rocktown, Lambertville (C.).

5. MARRUBIUM L.

1. *MARRUBIUM VULGARE* L. *Horehound*. M. p. 785. Waste places. Summer.

6. AGASTACHE Clayt. GIANT HYSSOP.

Glabrous or very nearly so, stout; corolla greenish-yellow.

1. *A. nepetoides*.

Pubescent, stout; corolla purplish; leaves green, both sides.

2. *A. scrophulariaefolia*.

1. *AGASTACHE NEPETOIDES* (L.) Kuntze. M. p. 786. Borders of woods. Summer.

Philadelphia—Fairmount Park (Ja.) (Wn.), Mayland's Garden (Te.), Bartram's Garden (B. Sm.), Wissahickon (VP.). *Bucks*—Narrowsville (Ke.), near Sellersville (Fr.), Solebury Twp. (Ws.). *Montgomery*—Lafayette (VP.). *Delaware*—Haverford (Le.). *Chester*—(P.). *Lancaster*—York Furnace (Li.). *Berks*—Blue Mountain, Mart. (B. C.). *Northampton*—(P.). *Dauphin*—Steelton (Wn.).

Camden—Gloucester (Wn.). *Monmouth*—Freehold (C.). *Mercer*—Trenton, Princeton (C.).

New Castle—Red Clay Creek, etc. Scarce.

2. *AGASTACHE SCROPHULARIAEFOLIA* (Willd.) Kuntze. M. p. 786. Borders of woods. Summer and fall.

Philadelphia—Manayunk, Mart. (B. C.), Fairmount Park (Ja.), Wissahickon (Te.). *Bucks*—Near Sellersville (Fr.). *Montgomery*—Summerville (VP.). *Delaware*—Near Sandy Bank, Upper Providence (Fu.), Swarthmore (Pr.), Tinicum, Middletown (B. Sm.), Concord (W. Tr.), Darby (VP.). *Chester*—(P.). *Lancaster*—(P.). *Northampton*—Easton, Porter (B. C.). *Dauphin*—Steelton (Wn.).

Camden—Banks of Delaware (C.). *Monmouth*—Freehold (C.).

New Castle—Brandywine, Red Clay Creek, J. Mason's. *Searce*.

7. NEPETA L.

1. NEPETA CATARIA L. *Catnip*. M. p. 787. Waste places. Summer.

8. GLECHOMA L.

1. GLECHOMA HEDERACEA L. *Ground Ivy, Gill-over-the-ground*. M. p. 787. Damp, shady places. Spring.

9. PRUNELLA L.

1. PRUNELLA VULGARIS L. *Self-heal, Heal-all*. M. p. 788. Woods and fields. Spring to late fall.

10. PHYSOSTEGIA Benth.

1. PHYSOSTEGIA VIRGINIANA (L.) Benth. *False Dragon-head*. M. p. 788. Wet ground; also escaped. Summer.

Lancaster—York Furnace, Susquehanna islands opposite Turkey Hill (Le.). *Dauphin*—(P.).

11. GALEOPSIS L.

1. GALEOPSIS TETRAHIT L. *Hemp-nettle*. M. p. 790. Waste places. Summer.

Philadelphia—Greenwich Point (Te.). *Delaware*—Chester, Dr. Jesse Young.

Camden—Kaighn's Point (Wn.).

12. LEONURUS L. MOTHERWORT.

Lower leaves palmately 2-5-cleft, the upper 3-cleft. 1. *L. Cardiaca*.
Leaves coarsely dentate or incised-dentate. 2. *L. Marrubiastrum*.

1. LEONURUS CARDIACA L. M. p. 790. Waste places. Summer.
2. LEONURUS MARRUBIASTRUM L. M. p. 790. Waste places. Summer.
Philadelphia—(P.). *Delaware*—Concord (W. Tr.), Castle Rock (VP.), Chad's Ford (Wn.). *Chester*—(P.).
New Castle—Granogue, Canby. Now common.

13. LAMIUM L. DEAD-NETTLE.

Upper leaves sessile or clasping.
Leaves all petioled.

Flowers red or purple.

Corolla 12-18 mm. long; leaves not blotched. 1. *L. amplexicaule*.

Corolla 20-25 mm. long; leaves commonly blotched. 2. *L. purpureum*.

3. *L. maculatum*.

Flowers white.

4. *L. album*.

1. LAMIUM AMPLEXICAULE L. *Henbit*. M. p. 791. Waste places and cultivated ground. Early spring to late fall.
2. LAMIUM PURPUREUM L. M. p. 791. Waste and cultivated soil. Spring to fall.

Philadelphia—Philadelphia Salt Works; I. Burk (He.), Wissahickon (Je.), Germantown (Me.); Woodlands Cemetery (Te.), below Park Nur-

series (VP.). *Delaware*—Ridley (Fu.), Marple (Fu.) (B. Sm.), Darby (Ja.). *Chester*—Goshen (W. Tr.). *Lancaster*—(P.).

Camden—Kaighn's Point (Ja.) (Wn.).

New Castle—Wawaset Nurseries.

3. *LAMIUM MACULATUM* L. M. p. 791. Roadsides; escaped from cultivation. Spring to fall.

Philadelphia—Haddington (Ws.). *Bucks*—(P.). *Delaware*—Wawa (Ke.), Lansdowne (Pe.), Darby Creek above West Chester Pike (VP.). *Lehigh*—Coplay (Kr.). *Northampton*—(P.).

4. *LAMIUM ALBUM* L. M. p. 791. Waste places. Spring to fall.

Montgomery—Shannonville (Cr.).

Camden—Kaighn's Point,

14. *BALLOTA* L.

1. *BALLOTA NIGRA* L. *Black Horehound*. M. p. 791. Waste places. Summer.

Philadelphia—Philadelphia Salt Works, I. Burk (He.), Greenwich Point, Girard Point (Te.).

Camden—Kaighn's Point (Ja.) (Wn.).

15. *STACHYS* L. *HEDGE-NETTLE*.

Leaves narrowed at the base, linear to lanceolate or oblong.

Stem glabrous; leaves entire or nearly so.

Leaves linear, 2-5 mm. wide.

Leaves oblong to linear-oblong, 4-10 mm. wide.

Stem retrorsely hirsute; leaves serrate.

Leaves cordate or truncate at the base, lanceolate to ovate.

Stem glabrous or nearly so.

Stem hirsute.

Leaves all very short-petioled, lanceolate to oblong.

Leaves, at least the lower, slender-petioled.

Leaves lanceolate or ovate, acute or acuminate.

Plant dark green; leaves firm; petioles 6-36 mm. long.

Plant light green; leaves membranous; petioles 1-5 cm. long.

Leaves ovate, obtuse; diffuse annual,

1. *STACHYS HYSSOPIFOLIA* Michx. M. p. 792. Fields and thickets. Summer.

Bucks—Bristol, Mart. (B. C.).

Burlington—Pemberton, Medford (C.), Moorestown (Sts.). *Camden*—Camden (C.). *Gloucester*—Malaga, Dr. J. B. Brinton (He.). *Middlesex*—Monmouth Junction (C.), Jamesburg (Wn.).

New Castle—Batten's, Ogletown, etc. Frequent.

2. *STACHYS ATLANTICA* Britton. M. p. 792. Marshy ground. Summer.

Bucks—(P.).

3. *STACHYS AMBIGUA* (A. Gray) Britton. M. p. 792. Moist soil. Summer.

Bucks—Bristol (P.).

4. *STACHYS TENUIFOLIA* Willd. M. p. 792. Moist fields and thickets. Summer.

Bucks—Bristol (P.).

5. *STACHYS PALUSTRIS* L. M. p. 793. Wet ground. Summer.
 6. *STACHYS ASPERA* Michx. M. p. 793. Wet ground. Summer.
Philadelphia—Fairmount Park (Wn.). *Bucks*—(P.). *Delaware*—
Lansdowne (Pe.). *Chester*—(P.). *Lancaster*—(P.).
New Jersey—Frequent.
New Castle—General and frequent.
 7. *STACHYS CORDATA* Riddell. M. p. 793. Woods and thickets. Summer.
Camden—Banks of Delaware (C.). *Hunterdon*—Rosemont (C.).
 8. *STACHYS ARVENSIS* L. *Woundwort*. M. p. 793. Waste places. Summer.
Philadelphia—(P.).
Camden—Kaighn's Point, I. Burk (He.) (Mac.).
STACHYS ANNUA L. M. p. 792. Ballast. Summer.
Camden—Kaighn's Point, I. Burk (He.).

16. *SALVIA* L. SAGE.

1. *SALVIA LYRATA* L. M. p. 794. Woodlands and meadows. Early summer.

17. *MONARDA* L.

Flower-clusters solitary, terminal.

Corolla scarlet, 3-5 cm. long; bracts red.

1. *M. didyma*.

Corolla white, pink or purple, 2-3 cm. long.

Leaves membranous; corolla slightly pubescent, 2-2.5 cm. long.

2. *M. Clinopodia*.

Leaves thin or firm; corolla pubescent, 2.5-3 cm. long.

Corolla cream-color, pink or purplish.

3. *M. fistulosa*.

Corolla and bracts deep purple or purple-red.

4. *M. media*.

Flower-clusters both axillary and terminal.

5. *M. punctata*.

1. *MONARDA DIDYMA* L. *Oswego Tea*, *Bee Balm*. M. p. 795. Moist woods along streams. Summer.
Philadelphia—Banks of Schuylkill, Dr. J. B. Brinton (He.). *Bucks*—Point Pleasant (Fr.). *Montgomery*—Bryn Mawr (Gi.). *Delaware*—Lansdowne (Pe.), Castle Rock (VP.). *Chester*—Rosedale (Mac.), near State Line, Canby (Ta.). *Berks*—Hamburg (Cr.). *Northampton*—(P.). *Hunterdon*—Rosemont (C.).
 2. *MONARDA CLINOPODIA* A. *Basil Balm*. M. p. 796. Woods and thickets. Summer.
Philadelphia—(P.). *Bucks*—Deep Run (Fr.). *Lancaster*—(P.). *Northampton*—(P.). *Dauphin*—(P.). *Delaware*—Marple (B. Sm.).
 3. *MONARDA FISTULOSA* L. *Wild Bergamot*. M. p. 796. Dry soil. Summer.
 4. *MONARDA MEDIA* Willd. *Purple Bergamot*. M. p. 796. Moist thickets. Summer.
Bucks—Near Doylestown (Fr.). *Northampton*—Easton, Porter (B. C.).
 5. *MONARDA PUNCTATA* L. *Horse-mint*. M. p. 796. Dry soil. Summer and fall.
Bucks—Bristol (P.), Solebury Twp. (Ws.).
New Jersey—Common.
New Castle—Delaware Junction, Commons.

18. BLEPHILIA Raf.

1. BLEPHILIA CILIATA (L.) Raf. M. p. 797. Dry, open places. Summer.
Delaware—Upper Darby, Dr. J. W. Eckfeldt (Fu.). *Chester*—Paxon
 (Cr.), Westtown (Sta.) (W. Tr.), Thorndale (St.). *Northampton*—(P.).
New Castle—Col. Davis, Brakely, near Centerville, Commons.

19. HEDEOMA Pers. MOCK PENNYROYAL.

1. HEDEOMA PULEGIODES (L.) Pers. *American Pennyroyal*. M. p. 797.
 Dry fields. Summer.

20. MELISSA L.

1. MELISSA OFFICINALIS L. *Bee-balm*. M. p. 798. Waste places, etc.;
 escaped. Summer.

21. CLINOPODIUM L.

Flower-clusters dense, axillary and terminal, setaceous-bracted. 1. *C. vulgare*.
 Flower-clusters loose, axillary, or forming terminal thyrses; bracts small.

2. *C. Nepeta*.

1. CLINOPODIUM VULGARE L. *Basil*. M. p. 799. Borders of thickets and
 fields. Summer and fall.
 2. CLINOPODIUM NEPETA (L.) Kuntze. *Field Balm*. M. p. 799. Dry, waste
 ground. Summer.
Philadelphia—Fairmount Park (Gi.), Germantown (Me.).
Gloucester—Swedesboro (He.) (Li.).

22. HYSSOPUS L.

1. HYSSOPUS OFFICINALIS L. *Hyssop*. M. p. 800. Roadsides; escaped.
 Summer.

23. ORIGANUM L.

1. ORIGANUM VULGARE L. *Wild Marjoram*. M. p. 800. Fields and waste
 places. Summer.

24. KOELLIA Moench. MOUNTAIN-MINT. BASIL.

Leaves prevailing linear, linear-lanceolate or oblong-lanceolate.

Calyx-teeth ovate-triangular, acute, one-fourth as long as the tube.

2. *K. Virginiana*.

Calyx-teeth subulate, lance-subulate or bristle-tipped.

Leaves linear or narrowly linear-lanceolate, entire.

1. *K. lacunosa*.

Leaves lanceolate, entire, or usually serrate.

Bracts appressed, erect; clusters dense. 3. *K. verticillata*.

Bracts spreading; clusters loose. 4. *K. clinopodioides*.

Leaves prevailing ovate, ovate-oblong or ovate-lanceolate.

Calyx-teeth bristle-tipped or subulate.

Bracts appressed; clusters dense; calyx-teeth bristle-pointed.

5. *K. aristata*.

Bracts spreading; clusters loose; calyx-teeth subulate.

6. *K. incana*.

Calyx-teeth triangular.

7. *K. mutica*.

1. KOELLIA FLEXUOSA (Walt.) MacM. M. p. 801. Fields and thickets.
 Summer.

2. *KOELLIA VIRGINIANA* (L.) MacM. M. p. 801. Dry fields and thickets. Summer.
3. *KOELLIA VERTICILLATA* (Michx.) Kuntze. M. p. 801. Dry fields and thickets. Summer.
Bucks—*Bristol* (Fr.). *Lancaster*—(P.). *Northampton*—*Easton*, *Porter* (B. C.). *Dauphin*—(P.).
Camden—*Ancora* (Li.), *Landenwold* (VP.). *Gloucester*—*Washington Park* (VP.). *Atlantic*—*Elwood* (C.), *Egg Harbor* (Li.). *Monmouth*—*Freehold* (C.).
New Castle—*Greenbank*, *Commons*. Frequent.
4. *KOELLIA CLINOPODIODES* (T. & G.) Kuntze. M. p. 801. Dry soil. Late summer.
Bucks—*Point Pleasant* (Fr.). *Delaware*—*Valley of Darby Creek* (B. Sm.). *Lancaster*—*McCall's Ferry* (Ca.). *Berks*—(P.). *Northampton*—*Easton*, *Porter* (B. C.).
Gloucester—*Swedesboro* (Li.). *Hunterdon*—*Milktown* (C.).
New Castle—*Swayne Station*, W. & N. Railroad, *Canby*.
5. *KOELLIA ARISTATA* (Michx.) Kuntze. M. p. 801. Dry pine-barrens. Summer.
Ocean—*Waretown* (C.).
6. *KOELLIA INCANA* (L.) Kuntze. M. p. 802. Dry thickets. Autumn.
7. *KOELLIA MUTICA* (Michx.) Britton. M. p. 802. Sandy soil. Summer.

25. *THYMUS* L. THYME.

1. *THYMUS SERPYLLUM* L. M. p. 802. Old fields and roadsides. Summer.

26. *CUNILA* L. DITTANY.

1. *CUNILA ORIGANOIDES* (L.) Britton. M. p. 803. Dry woods. Late summer.

27. *LYCOPUS* L. WATER HOREHOUND. BUGLEWEED.

Calyx-teeth 4 or 5, ovate, shorter than the nutlets.

Leaves mostly ovate, usually purple; base of stem not tuberous.

1. *L. Virginicus*.

Leaves mostly lanceolate to oblong; base of stem tuberous.

2. *L. communis*.

Calyx-teeth mostly 5, lanceolate or subulate, longer than the nutlets.

Bracts minute; corolla twice as long as the calyx.

Leaves sessile.

3. *L. sessilifolius*.

Leaves narrowed into a manifest petiole.

4. *L. rubellus*.

Bracts lanceolate or subulate; corolla not twice as long as the calyx.

Leaves pinnatifid or deeply incised.

5. *L. Americanus*.

Leaves ovate, coarsely dentate.

6. *L. Europaeus*.

1. *LYCOPUS VIRGINICUS* L. M. p. 803. Shady, moist places. Summer.
2. *LYCOPUS COMMUNIS* Bicknell. M. p. 803. Moist soil. Late summer.
Lancaster—(P.). *Northampton*—(P.).
3. *LYCOPUS SESSILIFOLIUS* A. Gray. M. p. 804. Pine-barrens. Summer.
Lancaster—(P.).
Burlington—*Batsto* (C.), *Atsion*, *Gloucester*—*Near Mickleton* (He.),
Swedesboro (Li.). *Salem*—*Penn's Grove* (C.). *Atlantic*—*Near Green-*

bank (C.), May's Landing (Li.), Egg Harbor (Wn.). Ocean—Forked River (Cr.) (Wn.), Toms River (Ha.) (Ja.).

4. *LYCOPUS RUBELLUS* Moench. M. p. 804. Moist soil. Summer.

Camden—Winslow (C.).

New Castle—Blackbird, Commons; Canal bank, Tatnall and Commons.

5. *LYCOPUS AMERICANUS* Muhl. M. p. 804. Wet soil. Summer.

6. *LYCOPUS EUROPAEUS* L. M. p. 804. Ballast. Summer.

Camden—Camden (C.). Salem—Salem (C.).

28. MENTHA L. MINT.

Whorls of flowers in terminal spikes, or some of them in the upper axils.

Plants glabrous or very nearly so.

Spikes slim, narrow, mostly interrupted; leaves sessile or nearly so.

1. *M. spicata*.

Spikes thick, mostly dense, at first short; leaves petioled.

2. *M. piperita*.

Plants villous, hirsute or canescent, at least at the nodes.

Spikes slim or narrow, often interrupted.

Leaves lanceolate or ovate-lanceolate, acute.

3. *M. longifolia*.

Leaves elliptic or ovate-oblong, obtuse; reticulated beneath.

4. *M. rotundifolia*.

Spikes 10-12 mm. thick, dense, elongated or short.

Leaves sessile; spikes 2-8 cm. long; plant canescent.

5. *M. alopecuroides*.

Leaves distinctly petioled, or the uppermost sessile; spikes short.

Leaves simply serrate.

6. *M. aquatica*.

Leaves mostly incised, the margin crisped and wavy.

7. *M. crispa*.

Whorls of flowers all axillary.

Leaves crenate-dentate; calyx-teeth triangular, short.

8. *M. arvensis*.

Leaves sharply serrate; calyx-teeth subulate.

Calyx-teeth ciliate, the tube glabrous; leaves ovate.

9. *M. gentilis*.

Calyx densely or sparsely pubescent all over.

Leaves ovate, pubescent on both sides; hairs of the stem reflexed.

10. *M. sativa*.

Leaves oblong or ovate-oblong, nearly or quite glabrous.

11. *M. Canadensis*.

1. *MENTHA SPICATA* L. *Spearmint*. M. p. 805. Wet places. Summer.

2. *MENTHA PIPERITA* L. *Peppermint*. M. p. 805. Wet soil. Summer.

3. *MENTHA LONGIFOLIA* (L.) Huds. *Horse-mint*. M. p. 805.

Philadelphia—Wissahickon (Je.). Bucks—(P.). Northampton—Easton, Porter (B. C.), Pen Argyl (U. C. S.).

Camden—White Horse (C.). Salem—Woodstown (C.). Cumberland—Vineland (Ab.). Monmouth—Seabright (C.). Hunterdon—Bull's Island (C.).

New Castle—Collins' Beach, Commons.

4. *MENTHA ROTUNDIFOLIA* (L.) Huds. M. p. 805. Waste places. Summer.

Bucks—Center Bridge (Fr.), near New Hope (Ws.). Montgomery—Whitemarsh (Me.). Lehigh—Coplay (Kr.). Northampton—Easton, Porter (B. C.).

- Camden*—Kaighn's Point (Ja.). *Cape May*—Cape May (C.).
New Castle—Centerville, *Commons*.
5. *MENTHA ALOPECUROIDES* HULL. M. p. 806. Roadsides. Summer.
Bucks—Hilltown, Sellersville, a common escape (Fr.). *Montgomery*—Whitemarsh (VP.). *Lancaster*—(P.). *Berks*—Hamburg (Ke.) (Li.).
Northampton—Easton, Porter (He.), Pen Argyl (He.).
Hunterdon—Lambertville (C.), Milford, Porter (B. C.).
6. *MENTHA AQUATICA* L. *Water Mint*. M. p. 806. Wet places. Autumn.
Philadelphia—Philadelphia Salt Works (He.). *Lancaster*—(P.).
Camden—Petty's Island, I. Burk (Fu.), Kaighn's Point (Mac.). *Hunterdon*—Rosemont (C.).
7. *MENTHA CRISPA* L. M. p. 806. Swamps and roadside ditches. Autumn.
Philadelphia—(P.). *Northampton*—Easton, Porter (B. C.).
Monmouth—Holmdel (C.).
8. *MENTHA ARVENSIS* L. *Corn Mint*. M. p. 806. Dry, waste places. Late summer.
Philadelphia—West Fairmount Park (Mac.), Oak Lane (Wn.). *Delaware*—Mill Creek, Dr. Geo. Smith (Fu.), Concord (W. Tr.). *Chester*—(P.). *Lancaster*—(P.). *Northampton*—Easton, Porter (B. C.). *Dauphin*—(P.).
New Jersey—Frequent (C.).
9. *MENTHA GENTILIS* L. M. p. 806. Waste places and along streams. Autumn.
Bucks—Hilltown, Sellersville (Fr.). *Lancaster*—(P.). *Northampton*—Easton, Porter (B. C.). *Dauphin*—(P.).
10. *MENTHA SATIVA* L. M. p. 806. Waste places. Summer.
Bucks—Canal Bank near Point Pleasant (Fr.). *Delaware*—Tinicum (Fu.). *Lancaster*—York Furnace (He.) (Ke.). *Northampton*—Easton (Ca.).
Camden—Camden (He.). *Gloucester*—Berkley (C.), Mickleton (He.), Swedesboro (Li.). *Mercer*—Trenton, Bordentown (C.). *Hunterdon*—Bull's Island (C.).
New Castle—14th Street and Orange Street, *Commons* and Tatnall.
11. *MENTHA CANADENSIS* L. *Wild Mint*. M. p. 806. Moist soil. Summer.

29. *COLLINSONIA* L.

1. *COLLINSONIA CANADENSIS* L. *Rich-weed, Horse-halm*. M. p. 807. Rich, moist woods. Summer and fall.

30. *PERILLA* Ard.

1. *PERILLA FRUTESCENS* (L.) Britton. M. p. 807. Waste places; escaped. Summer.
Bucks—Nockamixon (Fr.). *Montgomery*—Rose Glen (Pr.). *Delaware*—Sycamore Mills, T. C. Palmer; Bradley's Mills, Ridley Creek southwest of Media (Fu.). *Lancaster*—York Furnace (Br.). *Northampton*—Easton (P.).
New Castle—Creekside above High Bridge, East 7th Street Extended; meadow above fish ponds under B. & O. bridge.

Family 8. SOLANACEAE Pers. Potato Family.

Fruit a berry; corolla plicate, its lobes generally induplicate.

Anthers unconnected, destitute of terminal pores, dehiscent.

Fruiting calyx 5-angled and deeply 5-parted; ovary 3-5-celled.

1. *Physalodes*.

Fruiting calyx 5-lobed, not parted, 10-ribbed, often 5-10-angled, reticulated, wholly enclosing the berry, ovary 2-celled.

2. *Physalis*.

Anthers connivent or slightly connate; fruiting calyx not enlarged.

3. *Solanum*.

Fruit a nearly dry berry; corolla campanulate, little or not at all plicate, its lobes imbricated.

4. *Lycium*.

Fruit a capsule; corolla funnelform.

Capsule circumscissile toward the top, which separates as a lid; corolla irregular.

5. *Hyoscyamus*.

Capsule opening by valves, generally prickly.

6. *Datura*.

Capsule not prickly.

7. *Petunia*.

1. PHYSALODES Boehm.

1. PHYSALODES PHYSALODES (L.) Britton. *Apple-of-Peru*. M. p. 808.

Waste grounds near dwellings. Summer.

Philadelphia—Byberry, Mart. (B. C.). *Bucks*—Lower districts, Moyer (P.). *Delaware*—Concord (W. Tr.). *Chester*—(P.). *Lancaster*—On Susquehanna near the Maryland line (Pr.). *Northampton*—(P.).

Camden—Ballast (C.). *Gloucester*—Near Mickleton (He.), Swedesboro (Li.). *Atlantic*—May's Landing (Te.). *Monmouth*—Ocean Grove (C.).

New Castle—East 7th Street Extended. Rare.

2. PHYSALIS Boehm. GROUND CHERRY.

Annuals with branched fibrous roots.

Plants more or less pubescent.

Leaves ovate, oblique, acute or acuminate, subentire at the base; upper part repand or subentire; stem slender, diffuse, sharply angled.

1. *P. pubescens*.

Leaves cordate-oblique, strongly sinuate to the base; stem stout, obtusely angled.

2. *P. pruinosa*.

Plants glabrous, or the upper part sparingly beset with short hairs, or a little puberulent when young; fruiting calyx obtusely 5-10-angled, not sunken at the base.

3. *P. Philadelphica*.

Perennial by rootstocks and roots.

Pubescence on the leaves none; on the upper part of the stem sparse and short, if any.

3. *P. Philadelphica*.

Pubescence sparse, consisting of flat, sometimes jointed hairs; sometimes a little viscid.

4. *P. Virginiana*.

Pubescence dense, short, more or less viscid or glandular, often mixed with long, flat, jointed hairs.

5. *P. heterophylla*.

1. PHYSALIS PUBESCENS L. M. p. 810. Sandy soil. Summer.

Camden—Camden (C.). *Gloucester*—Swedesboro (Li.). *Salem*—Rid-dleton (Wa.). *Cumberland*—Vineland (Ab.). *Atlantic*—Egg Harbor (C.). *Ocean*—Manchester (C.). *Hunterdon*—Stockton (C.).

New Castle—Brandywine, etc. Not rare.

2. PHYSALIS PRUINOSA L. M. p. 810. Cultivated soil. Summer.

Bucks—Sellersville (Fr.). *Lancaster*—(P.).

3. PHYSALIS PHILADELPHICA Lam. M. p. 811. Fertile soil. Summer.

Philadelphia—Philadelphia, *Mart.* (B. C.), Wheel Pump (Ja.). *Bucks*—Near Sellersville, old garden (Fr.). *Delaware*—Haverford (Fu.), Wawa, Dr. J. B. Brinton (He.). *Lancaster*—(P.). *Northampton*—(P.). *Burlington*—Moorestown (C.). *Camden*—Clementon (C.), Camden (He.) (Li.).

New Castle—Mount Cuba (Ja.), north of Brandywine Spa.

4. *PHYSALIS VIRGINIANA* Mill. M. p. 811. Rich soil. Summer.

Philadelphia—(P.). *Bucks*—Wycombe, Sellersville (Fr.). *Delaware*—(P.). *Chester*—(P.). *Lancaster*—(P.). *Northampton*—Easton, Porter (B. C.).

New Jersey—Common.

New Castle—Frequent.

5. *PHYSALIS HETEROPHYLLA* Nees. M. p. 812. Rich soil. Summer.

Philadelphia—(P.). *Bucks*—Sellersville (Fr.). *Delaware*—Hay Island, Darby (B. Sm.). *Chester*—(P.). *Lancaster*—(P.). *Northampton*—(P.).

PHYSALIS ALKEKENGII L. *Winter Cherry*. M. p. 812. Introduced. Summer.

Philadelphia—Wissahickon (Je.).

New Castle—Near Centerville, Commons.

3. *SOLANUM* L. NIGHTSHADE.

Glabrous or pubescent herbs, not prickly.

1. *S. nigrum*.

Stellate-pubescent and prickly herbs.

Berry not enclosed by the calyx; perennials.

Hirsute; leaves ovate or oblong, sinuate or pinnatifid.

2. *S. Carolinense*.

Densely silvery-canescens; leaves linear or oblong, repand or entire.

3. *S. elaeagnifolium*.

Berry invested by the spiny calyx; annuals.

4. *S. rostratum*.

Climbing vine, not prickly; leaves hastate or 3-lobed.

5. *S. Dulcamara*.

1. *SOLANUM NIGRUM* L. *Common Nightshade*. M. p. 814. Shaded grounds and fields. Summer and fall.

2. *SOLANUM CAROLINENSE* L. *Horse-nettle*. M. p. 814. Sandy soil and waste grounds. Summer.

3. *SOLANUM ELAEAGNIFOLIUM* Cav. M. p. 814. Ballast. Summer.

Camden—Kaighn's Point, I. Burk (Fu.).

4. *SOLANUM ROSTRATUM* Dunal. *Beaked Nightshade*. M. p. 815. Waste places. Summer.

Philadelphia—Tioga Station, locality probably destroyed (Le.), Allegheny Ave. (Cr.), Mifflin Street Wharf (Ja.). *Bucks*—Perkasie (Fr.). *Delaware*—Lansdowne, Dr. Emily G. Hunt (He.), near Adele (Ws.). *Lancaster*—Columbia (Sa.) (Wa.).

Camden—Camden, I. Burk (He.). *Gloucester*—Swedesboro (He.) (Li.).

Atlantic—Hammonton (C.). *Cape May*—Cape May Point (C.). *Mercer*—Princeton Junction (Ws.).

New Castle—Near Wilmington (Pr.).

5. *SOLANUM DULCAMARA* L. *Bittersweet*. M. p. 815. Waste places and thickets. Summer.

LYCOBERSICON LYCOBERSICON (L.) Karst. Tomato. Escaped;
waste places. Summer.

4. LYCIUM L.

1. LYCIUM VULGARE (Ait. f.) Dunal. *Matrimony-vine*. M. p. 816. Waste ground about dwellings; escaped. Summer.

5. HYOSCYAMUS L.

1. HYOSCYAMUS NIGER L. *Black Henbane*. M. p. 816. Waste places. Summer.
Philadelphia—Girard Point (Cr.), Greenwich Point, I. Burk (Fu.)
(Te.). *Bucks*—Sellersville (Ja.) (Fr.).
Camden—Kaighn's Point (Ja.).

6. DATURA L. THORN APPLE.

- Stem green; flowers white; lower prickles of the fruit shorter.
Stem purple; flowers lavender or violet; prickles about equal.
1. *D. Stramonium*.
 2. *D. Tatula*.
1. DATURA STRAMONIUM L. *Jamestown- or Jimson-weed*. M. p. 816. Waste grounds. Summer.
 2. DATURA TATULA L. *Purple Thorn Apple*. M. p. 816. Waste grounds. Summer.

7. PETUNIA Juss.

- Corolla white, its tube cylindric.
Corolla violet-purple, its tube campanulate.
1. *P. axillaris*.
 2. *P. violacea*.
1. PETUNIA AXILLARIS (Lam.) B. S. P. M. p. 817. Waste places; escaped. Summer.
 2. PETUNIA VIOLACEA Lindl. M. p. 817. Waste places; escaped. Summer.
PETUNIA PARVIFLORA Juss. M. p. 818. Waste places and ballast. Summer.
Philadelphia—Philadelphia Navy Yard, Mart. (B. C.). *Northampton*—Easton, Porter (B. C.).
Camden—Kaighn's Point (Ja.).

Family 9. SCROPHULARIACEAE Lindl. Figwort Family.

1. Anther-bearing stamens 5; corolla rotate; leaves alternate.
1. *Verbascum*.
 2. Anther-bearing stamens 2 or 4; leaves opposite, verticillate or alternate.
Corolla spurred, saccate or gibbous on the lower side.
Leaves palmately 3-5-veined.
Leaves pinnately veined.
Flowers solitary in the axils.
Flowers in terminal racemes.
2. *Cymbalaria*.
 3. *Kickxia*.
 4. *Linaria*.
- Corolla neither spurred, saccate nor gibbous on the lower side.*
Anther-bearing stamens 4, the fifth sterile or rudimentary.
Sterile stamen a scale adnate to the upper side of the corolla.
5. *Scrophularia*.

Sterile stamen elongated, longer or shorter than the others.

Corolla tubular, 2-lipped, the lobes of the lower lip flat.

Sterile stamen shorter than the others; seeds winged.

6. *Chelone*.

Sterile stamen about equalling the others; seeds wingless.

7. *Pentstemon*.

Corolla 2-cleft, declined; middle lobe of the lower lip conduplicate.

8. *Collinsia*.

Stamens 4, all anther-bearing, or 2 sterile, or 2 only.

Stamens 4, all anther-bearing; corolla 2-lipped; stamens not enclosed in upper lip of corolla.

9. *Mimulus*.

Stamens 4, 2 anther-bearing and 2 sterile, or 2 only; corolla obviously 2-lipped.

Calyx 5-parted; upper lip of corolla present.

Sterile filaments short or none.

10. *Gratiola*.

Sterile filaments slender, 2-lobed.

11. *Ilysanthes*.

Calyx 4-toothed; upper lip of corolla obsolete; low mud plant.

12. *Micranthemum*.

Stamens 4, all anther-bearing; corolla nearly regular; flowers on scapes.

13. *Limosella*.

Stamens 2 only; corolla rotate, salverform, tubular or none.

Corolla rotate; capsule obcordate or emarginate, compressed.

14. *Veronica*.

Corolla tubular-funnelform; capsule ovoid, not compressed.

15. *Leptandra*.

Stamens 4, all anther-bearing; corolla campanulate, salverform or funnelform, scarcely 2-lipped.

Corolla salverform; flowers in a long spike.

16. *Buchnera*.

Corolla campanulate or funnelform.

Anthers awned at the base; corolla yellow.

17. *Dasystoma*.

Anthers awnless; corolla purple, pink or rarely white.

18. *Gerardia*.

Stamens 4, all anther-bearing, ascending under the upper lip of the corolla.

Ovules several or numerous; capsule many-seeded.

Anther-sacs dissimilar, the inner one pendulous by its apex; leaves mostly alternate.

19. *Castilleja*.

Anther-sacs similar and parallel; leaves mostly opposite.

Calyx 2-bracteolate at the base, 5-toothed.

20. *Schwalbea*.

Calyx not bracteolate, 4-5-toothed, or cleft or split.

21. *Pedicularis*.

Ovules only 1 or 2 in each cell of the ovary; capsule 1-4-seeded; leaves opposite.

22. *Melampyrum*.

1. VERBASCUM L. MULLEIN.

Plants densely woolly; flowers in dense terminal spikes or spike-like racemes.

1. *V. Thapsus*.

Leaves white-tomentose beneath; flowers in large terminal panicles.

2. *V. Lychnitis*.

Plant glabrous or sparingly glandular; flowers racemose.

3. *V. Blattaria*.

1. VERBASCUM THAPSUS L. *Common Mullein*. M. p. 819. Fields and waste places. Summer.

2. VERBASCUM LYCHNITIS L. *White Mullein*. M. p. 820. Fields and waste places. Summer.

Philadelphia—Falls of Schuylkill, Mart. (B. C.), Walnut Lane Station (Je.), East Fairmount Park (Le.), near Bartram's Garden (Mac.), Ger-

mantown (Mac.) (Me.) (Te.), Wissahickon (U. C. S.). *Bucks*—Newtown, Point Pleasant, Durham (Fr.), New Hope (Ws.). *Montgomery*—Shannonville (Cr.). *Delaware*—Springfield, Dr. Geo. Smith (Fu.), Concord (W. Tr.). *Berks*—Hamburg (Ke.). *Northampton*—Easton (Ca.). *Camden*—Pavonia (Wn.). *Gloucester*—Near Mickleton (He.), Swedesboro (Li.). *Atlantic*—Indian Neck (C.). *Mercer*—Trenton (Fr.). *Hunterdon*—Stockton, Bull's Island (C.).

3. *VERBASCUM BLATTARIA* L. *Moth Mullein*. M. p. 820. Fields and waste places. Summer and fall.

2. CYMBALARIA Medic.

1. *CYMBALARIA CYMBALARIA* (L.) Wettst. *Kenilworth Ivy*. M. p. 820. Waste places and roadsides; escaped. Summer.

3. KICKXIA Dumort. TOAD-FLAX.

Leaves ovate-orbicular, cordate or rounded at the base. 1. *K. spuria*.
Leaves triangular, mostly hastate. 2. *K. Elatine*.

1. *KICKXIA SPURIA* (L.) Dumort. M. p. 820. Ballast. Summer.
Philadelphia—Ballast (P.).
Camden—Kaighn's Point.
2. *KICKXIA ELATINE* (L.) Dumort. M. p. 820. Sandy, waste places. Summer.
Philadelphia—(P.). *Bucks*—Tohickon Creek near Point Pleasant (Br.), Quakertown (Fr.), Neshaminy near Rushland (Ws.), Pleasantville (P.). *Delaware*—Chester (Sch.).
Salem—Elsinboro (Mac.).
New Castle—Townsend and Collins, *Commons*; Hamburg Road, *Canby* and *Tatnall*.

4. LINARIA Hill. TOAD-FLAX.

Flowers yellow; 1.5-3 cm. long. 1. *L. Linaria*.
Flowers blue to white, 6-12 mm. long.
Spur of corolla filiform, curved; native species. 2. *L. Canadensis*.
Spur of corolla short, conic; European adventive species. 3. *L. repens*.

1. *LINARIA LINARIA* (L.) Karst. *Ramsted*, *Butter-and-eggs*. M. p. 821. Fields and waste places. Summer.
2. *LINARIA CANADENSIS* (L.) Dumort. *Blue Toad-flax*. M. p. 821. Dry soil. Summer.
3. *LINARIA REPENS* (L.) Mill. M. p. 821. Ballast. Summer.
Philadelphia—Ballast (P.).
Camden—Kaighn's Point, *I. Berk* (He.) (Ja.).

5. SCROPHULARIA L. FIGWORT.

Corolla dull outside; sterile stamen deep purple. 1. *S. Marylandica*.
Corolla shining outside; sterile stamen greenish-yellow. 2. *S. leporella*.

1. *SCROPHULARIA MARYLANDICA* L. M. p. 822. Woods and thickets. Summer.

2. *SCROPHULARIA LEPORELLA* Bicknell. M. p. 822. Woods and along roadsides. Early summer.

SCROPHULARIA CANINA. Ballast.

Philadelphia—Philadelphia, I. Burk (He.).

6. CHELONE L.

1. *CHELONE GLABRA* L. *Turtle-head, Snake-head*. M. p. 823. Wet places. Summer.

7. PENTSTEMON Soland. BEARD-TONGUE.

Stem pubescent or puberulent nearly or quite to the base. 1. *P. hirsutus*.

Only the inflorescence, or pedicels, or calyx pubescent or puberulent.

Corolla white, abruptly enlarged, 2.5-3 cm. long. 2. *P. Digitalis*.

Corolla purplish, gradually enlarged, 1.5-2 cm. long. 3. *P. Pentstemon*.

1. *PENTSTEMON HIRSUTUS* (L.) Willd. M. p. 824. Dry or rocky ground. Early summer.

2. *PENTSTEMON DIGITALIS* (Sweet) Nutt. M. p. 825. Fields and thickets. Early summer.

Bucks—Hilltown, Trumbauersville (Fr.). *Montgomery*—Fort Washington (VP.). *Delaware*—Upper Providence, one mile north of Media (Fu.), Tinicum (Le.), Concord (W. Tr.). *Lancaster*—New Texas (Ca.).

Mercer—Princeton (C.). *Middlesex*—Cranbury (C.). *Hunterdon*—Rosemont (C.).

3. *PENTSTEMON PENTSTEMON* (L.) Britton. M. p. 825. Moist or rich soil. Early summer.

Bucks—Sellersville (Fr.), Rock Hill (Ja.), Buckingham Valley (Ws.). *Montgomery*—Shannonville (Cr.). *Delaware*—Swarthmore (Pr.) (Ws.), Tinicum (Sa.). *Lancaster*—York Furnace (Cr.).

New Castle—Near Newark, Commons.

8. COLLINSIA Nutt.

1. *COLLINSIA VERNA* Nutt. *Blue-eyed Mary*. M. p. 826. Moist soil. Spring. *Philadelphia*—Germantown, Mart. (B. C.). *Northampton*—Easton, Porter (Fu.).

PAULOWNIA TOMENTOSA (Thunb.) Baill. M. p. 827. Escaped from cultivation. Spring.

9. MIMULUS L. MONKEY-FLOWER.

Leaves sessile, clasping; peduncles longer than the calyx. 1. *M. ringens*.
Leaves petioled; peduncles shorter than the calyx. 2. *M. alatus*.

1. *MIMULUS RINGENS* L. M. p. 827. Wet places. Summer.

2. *MIMULUS ALATUS* Soland. M. p. 827. Wet places. Summer.

Philadelphia—West Philadelphia along Schuylkill (Mac.), Angora (Te.).

Bucks—Rock Hill (Fr.), Solebury Twp. (Ws.). *Delaware*—Lansdowne (Pe.), Castle Rock (VP.). *Chester*—(P.). *Lancaster*—York Furnace (Cr.), Peach Bottom, McCall's (Le.). *Northampton*—(P.). *Dauphin*—

Near Harrisburg, Dr. J. B. Brinton (He.).

Burlington—Medford (Br.). *Salem*—Woodstown (Wa.). *Mercer*—

Crosswick's Creek, Trenton (C.). *Hunterdon*—Locktown, Baptisttown (C.).

New Castle—Frequent.

MIMULUS MOSCHATUS Dougl. M. p. 828. Wet places, adv. from Pacific coast. Summer.

Philadelphia—Rocks near Manayunk (P.).

10. GRATIOLOA L. HEDGE-HYSSOP.

Plants glabrous or glandular; anther-sacs transverse, separated.

Sterile filaments minute or none.

Glandular-puberulent; flowers 8-10 mm. long; capsule ovoid.

1. *G. Virginiana*.

Glabrous; flowers 14 mm. long; capsule globose.

2. *G. sphaerocarpa*.

Sterile filaments 2, slender, capitate at the summit.

Leaves lanceolate, entire or remotely denticulate.

3. *G. aurea*.

Leaves ovate or oblong, sharply serrate.

4. *G. viscosa*.

Plant hirsute; anther-sacs parallel, contiguous.

5. *G. pilosa*.

1. *GRATIOLOA VIRGINIANA* L. M. p. 829. Wet places. Summer.

2. *GRATIOLOA SPHAEROCARPA* Ell. M. p. 830. Wet places. Summer.

Cape May—Ocean View (C.).

New Castle—Near Wilmington, Vandyke, *Commons*.

3. *GRATIOLOA AUREA* Muhl. *Goldenpert*. M. p. 830. Sandy swamps. Summer.

Bucks—Bristol (Fr.) (Te.), Neshaminy (He.). *Northampton*—Easton (Ca.), on the Delaware, Bethlehem (P.).

New Jersey—Common.

New Castle—Townsend, *Canby* and *Tatnall*.

4. *GRATIOLOA VISCOSA* Schwein. M. p. 830. Brooks and swamps. Summer.

New Castle—Dupont's near Gordon Heights, *Commons*.

5. *GRATIOLOA PILOSA* Michx. M. p. 830. Dry soil. Summer.

Camden—Griffith Swamp near Camden, *Mart.* (B. C.). *Gloucester*—Swedesboro (Li.).

Cape May—Cape May (Ja.) (U. C. S.).

11. ILYSANTHES Raf.

1. *ILYSANTHES DUBIA* (L.) Barnhart. *False Pimpernel*. M. p. 830. Wet places. Summer.

12. MICRANTHEMUM Michx.

1. *MICRANTHEMUM MICRANTHEMOIDES* (Nutt.) Wettst. M. p. 831. Tidal mud. Autumn.

Philadelphia—East side of Penrose Ferry, C. E. Smith (Fu.).

Burlington—Barrack Creek (C.). *Camden*—Camden, *Mart.* (B. C.), *Delair* (Br.).

13. LIMOSELLA L. MUDWORT.

1. *LIMOSELLA AQUATICA* L. M. p. 831. Muddy shores and in brooks. Summer.

Delaware—(P.).

2. *LIMOSELLA TENUIFOLIA* Hoffm. *Mudwort*. M. p. 831. Brackish mud. Summer.

Philadelphia—Mud Island opposite Torresdale (Wm.). *Bucks*—*Andalusia, Mart.* (Fr.). *Delaware*—*Tinicum, Audrey H. Smith* (Fa.). *Camden*—*Camden* (C.). *Ocean*—*Bay Head* (C.). *Monmouth*—*Long Branch, Spring Lake* (C.).

New Castle—*Brandywine Creek* below railroad, *Canby*; *Dupont's Wharf, Commons*.

14. VERONICA L. SPEEDWELL.

Flowers racemose in the axils of the leaves, bracteolate.

Glabrous, or minutely glandular above (No. 3 rarely hairy); brook or swamp plants.

Leaves ovate, oval, oblong, or oblong-lanceolate; capsule compressed.

Stem leaves sessile, partly clasping, serrulate or entire.

All the leaves petioled, serrate. 1. *V. Anagallis-aquatica*.

Leaves linear or linear-lanceolate; capsule very flat. 2. *V. Americana*.

Pubescent, dry-soil plants; leaves crenate or dentate. 3. *V. scutellata*.

Flowers in terminal spikes or racemes, or solitary in the axils. 4. *V. officinalis*.

Flowers in terminal spikes. 5. *V. serpyllifolia*.

Flowers solitary in most of the axils; peduncles shorter than the leaves. Erect; glabrous or glandular; capsule emarginate.

Diffuse; pubescent; capsule obcordate. 6. *V. peregrina*.

Flowers solitary in the axils; peduncles as long as the leaves or longer. Leaves ovate or oblong, crenate or dentate. 7. *V. arvensis*.

Corolla not longer than the calyx; capsule narrowly emarginate. 8. *V. agrestis*.

Corolla longer than the calyx; capsule broadly emarginate. 9. *V. Bysantina*.

Leaves orbicular or broader, 3-5-lobed or crenate. 10. *V. hederacifolia*.

1. *VERONICA ANAGALLIS-AQUATICA* L. *Water Speedwell*. M. p. 832. Brooks and ditches. Summer.

Philadelphia—*Wister Wood* (Je.) (Re.), *Germantown* (Me.), bank of *Schuylkill* near *Philadelphia* (Pr.), above *Manayunk* (VP.). *Bucks*—*Sellersville* (Fr.). *Montgomery*—*Shannonville* (Cr.), *Spring Mills* (Ha.). *Chester*—*Petkiomen Junction* (Le.). *Northampton*—On the *Delaware* above *Easton* (P.).

Hunterdon—Along the *Delaware* (C.).

2. *VERONICA AMERICANA* Schwein. *American Brooklime*. M. p. 833. Brooks and ditches. Spring and summer.

3. *VERONICA SCUTELLATA* L. *Marsh Speedwell*. M. p. 833. Bogs. Summer.

Philadelphia—*Germantown* (Me.). *Bucks*—*Rock Hill* (Fr.) (Mac.), *Hulmeville* (Pr.), *Haycock Mountain* (Ws.). *Montgomery*—*Shannonville* (Cr.). *Chester*—(P.). *Lancaster*—Below *McCall's Ferry* (Br.), *Collins' Ferry* (Ca.). *Berks*—*Hamburg* (Br.). *Northampton*—(P.).

Somerset—*Black Swamp* (C.). *Mercer*—*Crosswick's Creek* (Br.), *Princeton Junction* (C.). *Hunterdon*—*Rosemont* (C.).

4. *VERONICA OFFICINALIS* L. *Common Speedwell*. M. p. 833. Dry fields and open woods. Summer.
5. *VERONICA SERPYLLIFOLIA* L. *Thyme-leaved Speedwell*. M. p. 833. Roadsides and fields. Spring and summer.
6. *VERONICA PEREGRINA* L. *Neckweed*. M. p. 834. Waste and cultivated ground, in damp soil. Spring to fall.
7. *VERONICA ARVENSIS* L. *Corn Speedwell*. M. p. 834. Fields, woods and waste places, and cultivated soil. Spring and summer.
8. *VERONICA AGRESTIS* L. M. p. 834. Fields and waste places. Summer.
Philadelphia—Byberry, *Mart.* (B. C.), Germantown (Me.), Falls of Schuylkill (Pr.), Greenwich Point (Te.). *Bucks*—Bensalem, *Mart.* (P.). *Delaware*—Haverford, T. C. Palmer (Fu.), Wayne (Ha.). *Lancaster*—(P.).
Camden—Ballast (C.). *Monmouth*—Long Branch (C.).
9. *VERONICA BYZANTINA* (Sibth. & Smith) B. S. P. M. p. 834. Waste ground. Summer.
Philadelphia—Bartram's Garden, Greenwich Point (Te.). *Montgomery*—Cheltenham Hills (Pr.). *Delaware*—Near Media (Fu.), Tinicum Island, Concord (W. Tr.). *Lancaster*—(P.).
Camden—Kaighn's Point (Ja.). *Salem*—Woodstown (Wa.).
New Castle—Tatnall and 19th streets, Febiger's. Rare.
10. *VERONICA FEDERAEFOLIA* L. *Ivy-leaved Speedwell*. M. p. 834. Shaded places. Spring to fall.
Philadelphia—Fairmount Park (VP.). *Delaware*—Swarthmore, Rose Valley (Ke.). *Chester*—(P.). *Lancaster*—On Conestoga Creek (Br.). *Northampton*—(P.).

15. LEPTANDRA Nutt.

1. *LEPTANDRA VIRGINICA* (L.) Nutt. *Culver's-root*, *Culver's-physic*. M. p. 834. Meadows, moist woods and thickets. Summer.

16. BUCHNERA L.

1. *BUCHNERA AMERICANA* L. *Blue-hearts*. M. p. 835. Moist, sandy ground. Summer.
Delaware—Williamson, Concord (Fu.), Middletown (W. Tr.). *Lancaster*—Pleasant Grove (Ca.), Little Britain Twp. (Pr.).
Burlington—Burlington (C.).
New Castle—Guyancourt, Tatnall; Hand's, Tatnall; Harvey, Commons; Townsend, Canby.

17. DASYSTOMA Raf. FALSE FOXGLOVE.

Plants glandular-pubescent; corolla pubescent without; leaves finely divided; annuals or biennials.

1. *D. Pedicularia*.
 Puberulent, cinereous or glabrous; corolla glabrous without; perennials.
 Cinereous-puberulent.
2. *D. flava*.
 Glabrous or very nearly so throughout.
3. *D. Virginica*.

1. *DASYSTOMA PEDICULARIA* (L.) Benth. M. p. 836. Dry woods and thickets. Late summer.
2. *DASYSTOMA FLAVA* (L.) Wood. M. p. 836. Open woods. Summer.

Scape filiform, the raceme sig-zag; flowers 1-10, yellow.

3. *U. subulata*.

Scape filiform; flowers minute, cleistogamous.

4. *U. cleistogama*.

Branches and finely-divided leaves floating, or creeping on the mud, bladder-bearing.

Scape bearing a whorl of leaves with inflated petioles.

5. *U. inflata*.

Scape leafless, or with a few minute scales.

Leaves verticillate; corolla purple.

6. *U. purpurea*.

Leaves crowded, 2-3-pinnately divided; corolla yellow, large.

7. *U. vulgaris*.

Leaves scattered, dichotomously divided.

Cleistogamous flowers among the leaves.

8. *U. clandestina*.

No cleistogamous flowers.

Bladders mainly or entirely on leafless branches.

Leaf-segments linear, flat.

9. *U. intermedia*.

Leaf-segments capillary.

10. *U. fibrosa*.

Bladders among the leaves.

11. *U. gibba*.

1. *UTRICULARIA CORNUTA* Michx. M. p. 846. Borders of ponds or in bogs. Summer.

New Jersey—Common in pine-barrens.

2. *UTRICULARIA RESUPINATA* B. D. Greene. M. p. 846. Sandy margins of ponds near the coast. Summer.

Cape May—Near Sea Isle City, I. Buck (He.).

3. *UTRICULARIA SUBULATA* L. M. p. 846. Wet, sandy soil. Summer.

Burlington—Between New Lisbon and Pemberton (C.), Quaker Bridge (He.), Hanover (Ja.), Atsion (Le.), Taunton (Sta.) (W. Tr.), Brown Mills (Te.). *Camden*—Atco (Te.), Clementon (VP.). *Gloucester*—Woodbury (C.). *Atlantic*—Egg Harbor (Cr.), May's Landing (Li.) (Wn.), Hammonton (Pr.), Absecon (Wn.). *Ocean*—Toms River, Dr. Geo. Smith (Fa.) (Te.), Forked River (Mar.).

New Castle—Thompson's, Tatnall; Ogletown, Batten's, Greenbank, Commons. Not rare.

4. *UTRICULARIA CLEISTOGAMA* (A. Gray) Britton. M. p. 846. Wet soil. Summer.

Burlington—Atsion (C.), Medford (Br.). *Atlantic*—Egg Harbor (Cr.). *Cape May*—Woodbine (VP.). *Ocean*—Forked River (Wn.).

5. *UTRICULARIA INFLATA* Walt. M. p. 846. Still water. Spring and summer.

Bucks—Bristol, Mart. (B. C.).

Burlington—Taunton (Sta.) (W. Tr.). *Camden*—Longacoming (C.), Clementon (Ja.) (Wn.), Lucaston (VP.). *Gloucester*—Center Square (Cr.), Woodbury (C.), near Mickleton (He.). *Salem*—Riddletown. *Cumberland*—Vineland (C.). *Cape May*—Cape May (Te.). *Atlantic*—Egg Harbor, Hammonton (C.). *Ocean*—Forked River (Cr.). *Monmouth*—Long Branch (C.), Spring Lake (Wn.).

New Castle—Col. Andrews'.

6. *UTRICULARIA PURPUREA* Walt. M. p. 847. Ponds, mainly near the coast. Summer.

Burlington—Quaker Bridge, E. Diffenbaugh (B. C.) (Pr.), Brown Mills (Le.) (Sta.). *Gloucester*—Near Mickleton (He.), Repaupo (Li.). *Ocean*—Toms River (Cr.) (Ja.).

7. *UTRICULARIA VULGARIS* L. M. p. 847. Ponds and slow streams. Summer.
8. *UTRICULARIA CLANDESTINA* Nutt. M. p. 847. Shallow ponds. Summer.
Burlington—Atsion, *Mart.* (B. C.), Waterford, Shamong (C.), Taunton (Sts.). *Camden*—Longacoming, Atco (C.), Ancora (Te.), Clementon (Wn.). *Gloucester*—Near Mickleton (He.). *Cumberland*—Vineland (C.), Millville (Je.). *Atlantic*—Hammononton (Cr.) (Wn.), May's Landing (Me.); Absecon (Wn.). *Ocean*—Forked River (Cr.) (Ja.) (Wn.), Island Heights (Mac.), Toms River (Te.). *Monmouth*—Tracy's (C.).
New Castle—Cedar Swamp, Johnson's.
9. *UTRICULARIA INTERMEDIA* Hayne. M. p. 847. Shallow pools. Summer.
Bucks—Penn Valley (Cr.). *Northampton*—(P.).
Burlington—Quaker Bridge (Pr.) (Te.). *Camden*—Near Camden, E. Diffenbaugh (B. C.). *Ocean*—Toms River (C.), Forked River (Cr.).
10. *UTRICULARIA FIBROSA* Walt. M. p. 847. Shallow pools in pine-barrens. Summer.
Burlington—Quaker Bridge, Brown Mills, Atsion (C.). *Camden*—Atco (Ke.), above Cedar Brook, Clementon (VP.). *Gloucester*—Malaga, Franklinville (C.). *Salem*—Elmer (C.). *Atlantic*—May's Landing (C.), Pomona (Te.), Hammononton (Sts.), Egg Harbor (Wn.). *Ocean*—Manchester (C.), Barnegat (Fu.), Toms River (Le.), Forked River (Mac.).
Monmouth—Upper Squankum (C.).
11. *UTRICULARIA GIBBA* L. M. p. 847. Shallow water. Summer.
Bucks—(P.). *Lancaster*—Shock's Mill, A. P. Garber (B. C.), Collins' Ferry (Oa.), York Furnace (Cr.) (He.) (Ke.).
Gloucester—Near Oldman's Creek, near Mickleton (He.), near Swedesboro (Li.). *Cape May*—Cape May (Cr.). *Atlantic*—Hammononton (Ja.).
Ocean—Bay Head (C.). *Monmouth*—Freehold (C.).
New Castle—Thompson's.

Family 11. **OROBANCHACEAE** Lindl. Broom-rape Family.

Flowers all complete and perfect.

Calyx 2-5-toothed.

Calyx about equally 5-cleft; no bracts on pedicels nor calyx.

1. *Thalesia*.

Calyx unequally toothed, or split on both sides; flowers bracted.

2. *Orobanche*.

Calyx spathe-like, split on the lower side, 3-4-toothed on the upper.

3. *Conopholis*.

Lower flowers cleistogamous, fertile; upper complete, mostly sterile.

4. *Leptaminum*.

1. **THALESIA** Raf. CANCER-ROOT.

1. *THALESIA UNIFLORA* (L.) Britton. M. p. 849. Damp woodlands. Spring.

2. **OROBANCHE** L.

1. *OROBANCHE MINOR* J. E. Smith. Broom-rape. M. p. 849. Parasitic on roots of clover. Early summer.

Philadelphia—City flower-pots (Ta.). *Delaware*—Lewis' Mill—Crum Creek (VP.). *Chester*—Falls of French Creek (Mac.). *Northampton*—(P.).

Camden—Haddonfield. *Gloucester*—Once seen at Mickleton (He.), Swedesboro (Li.), Woodbury (C.). *Ocean*—Toms River (C.). *Mercer*—Princeton (C.).

New Castle—Centerville, Commons; Granogue, Mrs. C. F. Thomas.

3. CONOPHOLIS Wallr.

1. *CONOPHOLIS AMERICANA* (L. f.) Wallr. *Squaw-root*. M. p. 850. Rich woods. Spring and summer.

Philadelphia—Wissahickon. *Bucks*—Rock Hill (Fr.). *Delaware*—Valley of Darby Creek, Dr. Geo. Smith (B. Sm.). *Chester*—(P.). *Lancaster*—York Furnace, Lancaster, A. A. Heller (He.), Peach Bottom (Pr.), Fites' Eddy (W. Tr.). *Dauphin*—Harrisburg, Steelton (Wn.).

Gloucester—Swedesboro (Li.). *Hunterdon*—Rosemont (C.).

New Castle—Brandywine.

4. LEPTAMNIUM Raf.

1. *LEPTAMNIUM VIRGINIANUM* (L.) Raf. *Beech-drops*. M. p. 851. Under beech trees. Autumn.

Family 12. BIGNONIACEAE Pers. Trumpet-creeper Family.

Leaves compound; anther-bearing stamens 4; vines.

1. *Tecoma*.

Leaves simple; anther-bearing stamens mostly 2; trees.

2. *Catalpa*.

1. TECOMA Juss.

1. *TECOMA RADICANS* (L.) DC. *Trumpet-creeper*, *Trumpet-flower*. M. p. 851. Moist soil; common in cultivation. Late summer.

Philadelphia—Bartram's Garden (Ja.), Wissahickon (Je.). *Bucks*—Tullytown (Mac.) (Fr.). *Lancaster*—(P.). *Lehigh*—Hanover (Kr.).

Gloucester—Washington Park (Ja.) (Wn.), Swedesboro (Li.), Westville (Wn.). *Salem*—Riddleton (Wa.). *Cumberland*—Haleyville (C.).

Cape May—Cape May (He.) (Te.). *Ocean*—Point Pleasant (Te.).

New Castle—In south of county.

2. CATALPA Scop.

1. *CATALPA CATALPA* (L.) Karst. *Indian Bean*. M. p. 852. Escaped from cultivation. Early summer.

CATALPA SPECIOSA Warder. M. p. 852. Cultivated. Spring.

Family 13. MARTYNIACEAE Link. Unicorn-plant Family.

1. MARTYNIA L.

1. *MARTYNIA LOUISIANA* Mill. *Unicorn-plant*. M. p. 853. Cultivated. Summer.

Bucks—Lower end of county, Mart. (P.). *Dauphin*—(P.).

Camden—Ballast (C.). *Monmouth*—Sandy Hook (C.).

Family 14. ACANTHACEAE J. St. Hil. Acanthus Family.

Corolla convolute in the bud, nearly regular; stamens 4.

1. *Euellia*.

Corolla imbricated in the bud, strongly 2-lipped, stamens 2.

2. *Dianthera*.

1. RUELLIA L.

Calyx-segments linear-lanceolate, scarcely exceeding the capsule.

1. *R. strepens*.

Calyx-segments filiform-linear, exceeding the capsule.

2. *R. ciliosa*.

1. RUELLIA STREPENS L. M. p. 854. Dry woods. Early summer.

Lancaster—York Furnace (Br.), near Lancaster (Ca.).

Atlantic—Ventnor (Gi.).

New Castle—Near Collins' Beach, Canby.

2. RUELLIA CILIOSA Pursh. M. p. 854. Dry soil. Summer.

Cape May—Cape May Court-house, I. Burk (He.).

2. DIANTHERA L.

1. DIANTHERA AMERICANA L. *Water-willow*. M. p. 855. Water and wet places. Summer.

Bucks—Andalusia, Mart. (P.). *Chester*—(P.). *Lancaster*—York Furnace, Susquehanna River (Pr.), Fites' Eddy (W. Tr.), Columbia (Wn.).

Dauphin—Harrisburg (Me.), Steelton (Wn.).

Gloucester—Red Bank (Ja.), Swedesboro (Li.). *Cape May*—Five-mile Beach (Ja.). *Mercer*—Trenton (C.).

New Castle—Banks of Canal, St. George's, etc. Common.

Family 15. PHRYMACEAE Schauer. Lop-seed Family.

1. PHRYMA L.

1. PHRYMA LEPTOSTACHYA L. *Lopseed*. M. p. 856. Woods and thickets. Summer.

Order 6. PLANTAGINALES.

Family 1. PLANTAGINACEAE Lindl. Plantain Family.

1. PLANTAGO L. PLANTAIN.

Corolla-lobes spreading or reflexed in fruit, not closed over the top of the pyxis.

Leaves ovate, lanceolate or oblong.

Seeds several or many in each pyxis.

Pyxis ovoid, circumscissile at about the middle.

1. *P. major*.

Pyxis narrower, circumscissile a little below the middle.

2. *P. halophila*.

Pyxis oblong, circumscissile much below the middle.

3. *P. Eugelii*.

4. *P. lanceolata*.

Seeds 2-4 in each pyxis.

Leaves linear or filiform.

Leaves fleshy; plant maritime.

5. *P. maritima*.

Leaves not fleshy; plant not maritime.

6. *P. aristata*.

Corolla-lobes erect and closed over the top of the pyxis.

Leaves spatulate to obovate; stamens 4.

7. *P. Virginica*.

Leaves linear-filiform; stamens 2.

Capsule about 4-seeded, slightly exceeding the calyx.

8. *P. elongata*.

Capsule 8-20-seeded, twice as long as the calyx.

9. *P. heterophylla*.

1. PLANTAGO MAJOR L. M. p. 857. Waste places. Summer.

2. *PLANTAGO HALOPHILA* Bicknell. M. p. 1051. Salt marshes. Summer.
New Jersey—Frequent along the coast.
3. *PLANTAGO RUGELLII* Dec. M. p. 857. Fields, woods and waste places.
Summer.
4. *PLANTAGO LANCEOLATA* L. *Ribgrass, Rippelgrass.* M. p. 857. Fields and
waste places. Spring to fall.
5. *PLANTAGO MARITIMA* L. M. p. 858. Salt marshes and seashores. Sum-
mer.
6. *PLANTAGO ARISTATA* Michx. M. p. 859. Dry grounds. Spring to fall.
Bucks—Sellersville, Tullytown (Fr.). *Delaware*—Tinicum. *Lancaster*
—Paradise (St.). *Northampton*—Easton, Porter (B. C.).
New Jersey—Common.
7. *PLANTAGO VIRGINICA* L. M. p. 859. Dry soil. Spring and summer.
8. *PLANTAGO ELONGATA* Pursh. M. p. 859. Dry, sandy soil. Spring and
summer.
Philadelphia—Fairmount Park, I. Burk (Fu.).
Camden—Haddonfield (C.). *Ocean*—Forked River (Mac.). *Monmouth*
—Keyport (C.).
New Castle—Near S. H. No. 7, Tatnall; Quarryville and opposite
Bockford, Commons.
9. *PLANTAGO HETEROPHYLLA* Nutt. M. p. 859. Moist soil. Spring and
summer.
Philadelphia—Philadelphia Navy Yard, I. Burk (Fu.).
PLANTAGO CORONOPSIS L. M. p. 859. Ballast.
Camden—Kaighn's Point (Ja.).

Order 7. RUBIALES.

Leaves always stipulate, usually blackening in drying.

Fam. 1. *Rubiaceae.*

Leaves usually estipulate, not blackening in drying. Fam. 2. *Caprifoliaceae.*

Family 1. RUBIACEAE B. Juss. Madder Family.

Leaves opposite, stipulate (sometimes verticillate in No. 3).

Ovules numerous in each cavity of the ovary; herbs.

Top of the capsule free from the ovary; seeds few, peltate.

1. *Houstonia.*

Capsule wholly adnate to the ovary; seeds minute, angular.

2. *Oldenlandia.*

Ovules 1 in each cavity of the ovary.

Shrubs or small trees; flowers in dense globular heads.

3. *Cephalanthus.*

Low evergreen herbs; flowers 2 together, their ovaries united.

4. *Mitchella.*

Herbs; flowers axillary, nearly sessile, distinct.

5. *Diodia.*

Leaves appearing verticillate; herbs (some of the leaves rarely opposite in No. 6).

Corolla rotate; calyx-teeth minute or none.

6. *Galium.*

Corolla funnelform.

7. *Sherardia.*

1. HOUSTONIA L.

Plants 7-18 cm. high; peduncles 1-flowered.

1. *H. coerules.*

Plants 10-25 cm. high; flowers cymose.

2. *H. longifolia.*

1. *HOUSTONIA COERULEA* L. *Bluets, Innocence, Quaker Ladies*. M. p. 861.
Moist and grassy places. Spring.
2. *HOUSTONIA LONGIFOLIA* Gaertn. M. p. 862. Dry, open places. Summer.
Philadelphia—Fairmount Park (Gi.). *Bucks*—(P.). *Delaware*—
Swarthmore, sporadic (Fr.). *Chester*—West Chester, *Joshua Hoopes*
(Fu.). *Lancaster*—York Furnace (Cr.) (Le.). *Berks*—(P.). *North-*
ampton—(P.). *Dauphin*—Harrisburg (Ca.), Paxtang (Mar.), Steelton
(Wn.).
Ocean—Manchester (C.).

2. *OLDENLANDIA* L.

1. *OLDENLANDIA UNIFLORA* L. *Clustered Bluets*. M. p. 862. Low grounds.
Summer.
Burlington—Union Hall, Burlington (C.). *Camden*—Banks of Dela-
ware (C.), Camden, *Mart.* (B. C.), Kaighn's Point, I. *Burk* (Fu.).
Gloucester—Westville, Duck Pond, I. *Burk*, and near Mickleton (He.),
Swedesboro (Li.). *Salem*—Elsinboro (C.), Riddleton (Cr.) (He.) (Wa.).
Cumberland—Sea Breeze (C.). *Cape May*—Cape May (Cr.), Ocean City
(He.), Five-mile Beach (Le.). *Atlantic*—Atlantic City (Pr.). *Ocean*—
Manchester (C.), Forked River (Wn.). *Monmouth*—North Spring Lake,
Como, Brielle (C.).
New Castle—Townsend, Commons.

3. *CEPHALANTHUS* L.

1. *CEPHALANTHUS OCCIDENTALIS* L. *Button-bush*. M. p. 863. Swamps
and along streams. Summer.

4. *MITCHELLA* L.

1. *MITCHELLA REPENS* L. *Partridge-berry*. M. p. 863. Woods. Spring.

5. *DIODIA* L. *BUTTON-WEED*.

- Leaves linear-lanceolate; style entire; stigmas capitate. 1. *D. teres*.
Leaves lanceolate or oval; style 2-cleft; stigmas filiform. 2. *D. Virginiana*.
1. *DIODIA TERES* Walt. M. p. 864. Dry or sandy soil. Summer.
 2. *DIODIA VIRGINIANA* L. M. p. 864. Moist soil. Summer.
Philadelphia—Navy Yard, naturalized, *Dr. Geo. Smith* (Fu.).
Cape May—Cape May.

6. *GALIUM* L. *BEDSTRAW*.

- Fruit dry, smooth, hispid or roughened.
Annuals (except Nos. 1 and 2).
Flowers yellow; leaves narrowly linear. 1. *G. verum*.
Flowers white or greenish-white.
Fruit smooth or glabrous. 2. *G. Mollugo*.
Fruit granular or tubercled, not bristly. 3. *G. tricornae*.
Fruit densely bristly-hispid. 4. *G. Aparine*.
- Perennials.
Fruit bristly-hispid (or becoming glabrous in No. 8).
Leaves in 4's, 1-nerved. 5. *G. pilosum*.
Leaves in 4's, 3-nerved.
Leaves lanceolate, oval or ovate; flowers in open cymes.

- Upper leaves lanceolate or ovate-lanceolate, acuminate. 6. *G. lanceolatum*.
 Upper leaves ovate, oblong-ovate, ovate-lanceolate or obovate, obtuse. 7. *G. circaezans*.
 Leaves linear to lanceolate; flowers in terminal panicles. 8. *G. boreale*.
 9. *G. triflorum*.
 Leaves in 6's.
 Fruit smooth and glabrous.
 Endosperm annular in cross-section.
 Stems smooth or nearly so. 10. *G. tinctorium*.
 Stems minutely retrorse-hispid. 11. *G. Claytoni*.
 Endosperm lunate in cross-section.
 Stem nearly or quite smooth. 12. *G. concinnum*.
 Stem strongly retrorse-hispid. 13. *G. asprellum*.
 Fruit fleshy, resembling a double berry. 14. *G. hispidulum*.
1. *GALIUM VERUM* L. M. p. 865. Waste places and fields. Summer.
Philadelphia—Girard Point (Te.). *Bucks*—Tullytown (Fr.) (Ja.).
 2. *GALIUM MOLLUGO* L. M. p. 865. Fields and waste places. Summer.
Philadelphia—Banks of Schuylkill at Manayunk (He.), Germantown (Me.). *Bucks*—Doylestown, Tullytown (Fr.). *Northampton*—(P.).
Camden—Kaighn's Point (Mac.) (Wn.). *Cumberland*—Vineland (Ab.). *Atlantic*—May's Landing (C.).
New Castle—Wawaset Nurseries, Centerville, *Commons*.
 3. *GALIUM TRICORNE* Stokes. M. p. 865. Ballast. Summer.
Camden—Kaighn's Point (Wn.).
 4. *GALIUM APARINE* L. *Cleavers*, *Goosegrass*. M. p. 865. Shaded grounds. Summer.
 5. *GALIUM PILOSUM* Ait. M. p. 866. Dry copses. Summer.
 - 5a. *GALIUM PILOSUM PUNCTICULOSUM* (Michx.) T. & G. M. p. 866. Dry, sandy soil. Summer.
Camden—Ancora (Li.). *Cape May*—Sea Isle City (Li.). *Atlantic*—Egg Harbor (C.).
 6. *GALIUM LANCEOLATUM* Torr. *Wild Licorice*. M. p. 866. Dry woods. Summer.
Bucks—Rock Hill, Solebury Twp. (Ws.). *Montgomery*—Along Skip-pack Creek (Le.). *Delaware*—Valley of Darby Creek (B. Sm.), Concord (W. Tr.), Castle Rock (VP.), Swarthmore (Ws.). *Chester*—French Creek (Le.), Phoenixville, E. Diffenbaugh (B. C.). *Lancaster*—(P.). *Berks*—Hamburg (Cr.) (Ke.), Reading (Wn.). *Lehigh*—Lehigh Mountain (Kr.). *Northampton*—Easton, Porter (B. C.).
Monmouth—Freehold (C.). *Mercer*—Hightstown (C.). *Hunterdon*—Rosemont (C.).
New Castle—Frequent.
 7. *GALIUM CIRCAEZANS* Michx. *Wild Licorice*. M. p. 866. Woods. Summer.
 8. *GALIUM BOREALE* L. M. p. 866.
Philadelphia—(P.). *Bucks*—Quakertown (Cr.), near Sellersville (Fr.), Nockamixon (He.) (Wn.), Rock Hill, Dr. J. B. Brinton; Lahaska (Ws.), Argus (Wn.). *Montgomery*—Sumneytown (VP.). *Delaware*—Darby, Dr. Geo. Smith (Fu.). *Chester*—W. Nottingham Twp. (Le.). *Lancaster*

—(P.). *Lehigh*—Lehigh Mountain, Salisbury (Kr.). *Northampton*—Cemetery Woods Easton, Porter (B. C.).

Mercer—Princeton, Ewing (C.). *Hunterdon*—Locktown, Bull Island (C.).

New Castle—Red Clay Creek, Vernon's, Speakman's, Commons.

9. *GALIUM TRIFLOSUM* Michx. *Sweet-scented Bedstraw*. M. p. 867. Woods. Summer.

10. *GALIUM TINCTORIUM* L. *Wild Madder*. M. p. 867. Damp, shady places, wet meadows and swamps. Summer.

Bucks—Argus, Rock Hill (Fr.). *Lancaster*—(P.).

11. *GALIUM CLAYTONII* Michx. M. p. 867. Swamps. Summer.

Bucks—Rock Hill (Fr.). *Northampton*—(P.).

12. *GALIUM CONCINNUM* Torr. & Gray. M. p. 868. Dry woodlands. Summer.

Bucks—Bensalem, Mart. (Fr.). *Lancaster*—York Furnace (Cr.) (Le.). *Camden*—Near Philadelphia (C.).

13. *GALIUM ASPRELLUM* Michx. M. p. 868. Alluvial ground. Summer.

14. *GALIUM HISPIDULUM* Michx. M. p. 868. In dry or sandy soil. Summer.

Cape May—Cape May Point (C.).

7. *SHERARDIA* L.

1. *SHERARDIA ARVENSIS* L. *Herb-sherard*. M. p. 868. Waste places. Summer.

Philadelphia—Chestnut Hill (VP.). *Northampton*—Ore heaps at Bethlehem (P.).

Camden—Ballast, C. A. Boice (B. C.). *Salem*—Woodstown (Wa.). *Cumberland*—Vineland (Ab.).

Family 2. *CAPRIFOLIACEAE* Vent. **Honeysuckle Family.**

Corolla rotate to urn-shaped; flowers in compound cymes; style deeply 2-5-lobed; shrubs or trees.

Leaves pinnate; drupe 3-5-seeded.

1. *Sambucus*.

Leaves simple; drupe 1-seeded.

2. *Viburnum*.

Corolla tubular to campanulate, often 2-lipped; style slender.

Erect perennial herbs; leaves connate.

3. *Triosteum*.

Shrubs or vines.

Fruit a few-seeded berry.

Corolla short, campanulate, regular or nearly so.

4. *Symphoricarpos*.

Corolla more or less irregular, tubular or campanulate.

5. *Lonicera*.

Fruit a 2-celled capsule; corolla funnelform.

6. *Diervilla*.

1. *SAMBUCUS* L. ELDER.

Cyme convex; fruit purplish-black.

1. *S. Canadensis*.

Cyme thyrsoid-campanulate.

2. *S. pubens*.

1. *SAMBUCUS CANADENSIS* L. *Common Elder*. M. p. 869. Moist soil.

Early summer.

2. *SAMBUCUS PUBENS* Michx. *Red-berried Elder*. M. p. 869. Rocky woods. Spring.

Bucks—Nockamixon, Point Pleasant, river cliffs, Upper Black Eddy (Ws.). *Chester*—Valley Forge, West Chester, *Joshua Hoopes* (Fu.). *Lancaster*—New Texas (Ca.). *Berks*—Hamburg (Li.). *Lehigh*—Rockdale (Kr.), Lehigh Valley (Sch.). *Northampton*—(P.).

SAMBUCUS EBULIS. Ballast.

Camden—Kaighn's Point.

2. VIBURNUM L. ARROW-WOOD.

- Outer flowers of the cyme large, radiant; drupe red. 1. *V. Opulus*.
 None of the flowers radiant; drupe blue or black.
 Leaves palmately veined or 3-ribbed. 2. *V. acerifolium*.
 Leaves pinnately veined.
 Leaves coarsely dentate, the veins prominent beneath.
 Leaves very short-petioled, pubescent. 3. *V. pubescens*.
 Petioles 0.6-4 cm. long.
 Leaves glabrous, or with tufts of hairs in the axils beneath. 4. *V. dentatum*.
 Leaves pubescent beneath, the pubescence more or less stellate. 5. *V. venosum*.
 Leaves entire, crenulate or serrulate, the veins not prominent.
 Cymes manifestly peduncled.
 Peduncle shorter than the cyme; leaves crenulate. 6. *V. cassinoides*.
 Peduncle equalling or longer than the cyme. 7. *V. nudum*.
 Cymes sessile or nearly so.
 Leaves prominently acuminate. 8. *V. Lentago*.
 Leaves obtuse or merely acute. 9. *V. prunifolium*.
1. *VIBURNUM OPULUS* L. *Cranberry-tree*. M. p. 870. Cultivated. Early summer.
2. *VIBURNUM ACERIFOLIUM* L. *Dockmakie*. M. p. 871. Dry woods. Spring.
3. *VIBURNUM PUBESCENS* (Ait.) Pursh. M. p. 871. Rocky woods. Early summer.
Bucks—Nockamixon, near Sellersville (Fr.). *Chester*—(P.). *Northampton*—(P.).
Mercer—Princeton (C.). *Hunterdon*—Lambertville (C.).
4. *VIBURNUM DENTATUM* L. M. p. 871. Moist places. Spring.
5. *VIBURNUM VENOSUM* Britton. M. p. 871. Moist soil. Spring.
Bucks—Woodbourne (Br.), Rock Hill (Fr.), Quakertown (P.). *Delaware*—Preston Run Barrens, Newtown (B. Sm.).
Camden—Near Collingswood (Mar.). *Gloucester*—Mullica Hill (C.), Swedesboro (Li.). *Salem*—Riddleton (He.) (Le.). *Mercer*—Trenton Junction (Br.). *Monmouth*—Sandy Hook (Mac.).
6. *VIBURNUM CASSINOIDES* L. *Withe-rod*. M. p. 872. Swamps and wet soil. Early summer.
Bucks—Tullytown (Mac.).
Burlington—Brown Mills (Le.). *Camden*—Cedar Brook (Ke.), Kirkwood (Mar.). *Gloucester*—Near Mickleton (He.), Repaupo, Tomlin (Ja.). *Salem*—Woodstown (Wa.). *Atlantic*—Hammonton, May's Landing (Li.), Batsto (VP.).

New Castle—East side of Thompson's Swamp.

7. *VIBURNUM NUDUM* L. M. p. 872. Swamps. Summer.
8. *VIBURNUM LENTAGO* L. *Sweet Viburnum, Sheep-berry*. M. p. 872. Rich soil. Spring.
Philadelphia—Wissahickon (Je.). *Bucks*—Near Sellersville (Fr.), Narrowsville (Ja.), Buckmanville (Ws.). *Montgomery*—Spring Mills (Ha.). *Delaware*—Williamson (Cr.), Tinicum, Dr. Geo. Smith (Fu.), Elwyn (U. C. S.). *Chester*—(P.). *Lancaster*—(P.). *Lehigh*—Coplay (Kr.). *Northampton*—(P.).
9. *VIBURNUM PRUNIFOLIUM* L. *Black Haw*. M. p. 872. Dry soil. Spring.
- 9a. *VIBURNUM PRUNIFOLIUM GLOBOSUM* Nash. M. p. 872.
Delaware—Hay Island, Darby (B. Sm.).

3. *TRIOSTEUM* L. *FEVERWORT. HORSE GENTIAN.*

Leaves ovate or oval; flowers purplish or dull red.

Leaves, or some of them, connate-perfoliate; fruit orange-yellow.

1. *T. perfoliatum*.

Leaves narrowed to a sessile base; fruit orange-red.

2. *T. aurantiacum*.

Leaves lanceolate or oval-lanceolate; flowers yellowish. 3. *T. angustifolium*.

1. *TRIOSTEUM PERFOLIATUM* L. M. p. 873. Rich soil. Early summer.
2. *TRIOSTEUM AURANTIACUM* Bicknell. M. p. 873. Rich soil. Spring.
3. *TRIOSTEUM ANGUSTIFOLIUM* L. M. p. 873. Rich soil. Summer.
Philadelphia—(P.). *Bucks*—Bedminster Twp. (Fr.). *Chester*—(P.). *Lancaster*—(P.).
New Castle—Giant's Cave, Bowman's Run, Tatnall; Allapocas, Canby; Centerville, Commons.

4. *SYMPHORICARPOS* Juss.

Fruit white; style glabrous.

1. *S. racemosus*.

Fruit red, style bearded.

2. *S. Symphoricarpos*.

1. *SYMPHORICARPOS RACEMOSUS* Michx. *Snowberry*. M. p. 874. Cultivated and escaped. Summer.
2. *SYMPHORICARPOS SYMPHORICARPOS* (L.) MacM. *Coral-berry*. M. p. 874.
Escaped from cultivation.
Philadelphia—Near Bartram's Garden, Fairmount Park (Ja.), Thorp's Lane and Wissahickon Creek (Je.). *Bucks*—Smithtown, Moyer (Fr.). *Delaware*—Near Media (B. Sm.). *Northampton*—Easton (Ca.).

5. *LONICERA* L. *HONEYSUCKLE.*

Climbing or trailing vines; flowers in heads or interrupted spikes; upper leaves connate-perfoliate.

Corolla 2-lipped, the upper lip 4-lobed, the lower entire.

Corolla glabrous within.

1. *L. Caprifolium*.

Corolla pubescent within.

2. *L. dioica*.

Corolla tubular, the short limb nearly equally 5-lobed.

3. *L. sempervirens*.

Climbing vines; flowers in pairs on short axillary peduncles.

4. *L. Japonica*.

Shrubs; flowers in pairs on axillary, bracted peduncles.

Leaves rarely cordate, more or less pubescent, or ciliate.

Leaves pale or glaucous, thick, strongly reticulate-veined.

5. *L. coerulea*.

Leaves bright green, thin, ciliate, not strongly reticulate; fruit red.

6. *L. ciliata*.

Leaves cordate, glabrous.

7. *L. Tatarica*.

1. *LONICERA CAPRIFOLIUM* L. *American Woodbine*. M. p. 875. Cultivated. Spring.

2. *LONICERA DIOICA* L. M. p. 875. Rocky grounds. Spring.
Bucks—Nockamixon, Rock Hill (Fr.), Argus (Wn.). *Montgomery*—Willow Grove (Ja.), Sumneytown, Skippack Creek (VP.). *Delaware*—Painters' Arboretum (Fu.), Media (Gi.). *Chester*—(P.). *Lancaster*—Millersville (Ca.) (Pr.). *Lehigh*—Salisbury (Kr.). *Northampton*—(P.). *Burlington*—Birmingham (C.).

3. *LONICERA SEMPERVIRENS* L. *Trumpet Honeysuckle*. M. p. 876. Low grounds and hillsides; also escaped from cultivation. Spring and summer.

4. *LONICERA JAPONICA* Thunb. *Japanese or Chinese Honeysuckle*. M. p. 876. Escaped from cultivation. Summer.

5. *LONICERA COERULEA* L. M. p. 876. Cultivated. Spring.
Philadelphia—Bartram's Garden (Fu.).

6. *LONICERA CILIATA* Muhl. *Fly Honeysuckle*. M. p. 876. Moist woods. Spring.
Montgomery—Tylersport, Uhl's Mill (Ja.). *Delaware*—Painters' Arboretum (Le.). *Chester*—Phoenixville, Mart. (B. C.).

7. *LONICERA TATARICA* L. *Tartarian Bush Honeysuckle*. M. p. 876. Escaped. Spring.

6. *DIERVILLA* Moench.

1. *DIERVILLA DIERVILLA* (L.) MacM. *Bush Honeysuckle*. M. p. 877. Rocky woodlands. Spring.

Philadelphia—Wissahickon (He.) (Te.), Schuylkill (Me.), Pennypack (Re.). *Bucks*—Rock Hill (Fr.), Point Pleasant (Ws.). *Montgomery*—West Conshohocken (Mac.), Skippack Creek, Sumneytown (VP.). *Delaware*—Middletown Barrens (Fu.), Wawa (Ja.), Concord (W. Tr.). *Chester*—Phoenixville, I. Burk (B. C.), Valley Forge (Cr.), Thorndale (St.). *Lancaster*—(P.). *Berks*—Wernersville (Te.). *Lehigh*—Salisbury (Kr.). *Northampton*—(P.).

Cumberland—Millville (Je.).

New Castle—Rattlesnake Run, Tatnall; Mount Cuba, Commons; Point Lookout, Canby.

Order 8. VALERIANALES.

Ovary 3-celled; 2 cavities empty.

Fam. 1. *Valerianaceae*.

Ovary 1-celled; flowers densely capitate, involucrate.

Fam. 2. *Dipsacaceae*.

Family 1. **VALERIANACEAE** Batsch. **Valerian Family.**

Fruit 1-celled; persistent calyx-lobes becoming awn-like; tall herbs.

1. *Valeriana*.

Fruit 3-celled; calyx-lobes minute or none; low herbs.

2. *Valerianella*.1. **VALERIANA** L. **VALERIAN.**1. *VALERIANA PAUCIFLORA* Michx. M. p. 878. Moist soil. Spring.*Lancaster*—*Millersville* (Ca.) (Pr.), *York Furnace* (Cr.), *Conestoga*, A.*P. Garber* (B. C.).2. **VALERIANELLA** Poll. **CORN-SALAD.**

Fruit flattened, twice as broad as thick.

1. *V. Locusta*.

Fruit oblong-tetragonal or ovoid-tetragonal, grooved.

2. *V. radiata*.

Fruit globose or saucer-shaped.

3. *V. Woodsiana*.1. *VALERIANELLA LOCUSTA* (L.) Bettke. M. p. 879. Old fields. Spring.2. *VALERIANELLA RADIATA* (L.) Dufur. M. p. 879. Low grounds. Spring.3. *VALERIANELLA WOODSIANA* (T. & G.) Walp. M. p. 880. Moist soil.
Early summer.*Philadelphia*—(P.) *Bucks*—(P.). *Lancaster*—(P.). *Dauphin*—(P.).3a. *VALERIANELLA WOODSIANA PATELLARIA* (Sulliv.) A. Gray. M. p. 880.
Moist soil. Early summer.*Bucks*—*Sellersville* (Fr.). *Lancaster*—(P.).Family 2. **DIPSACACEAE** Lindl. **Teasel Family.**1. **DIPSACUS** L.1. *DIPSACUS SYLVESTRIS* Huds. *Wild Teasel*. M. p. 880. Waste places.
Summer.Order 9. **CAMPANULALES.**

Flowers not in involucre heads; juice mostly milky.

Endosperm none; flowers monœcious or diœcious; vines.

Fam. 1. *Cucurbitaceae*.

Endosperm present, fleshy; flowers perfect.

Fam. 2. *Campanulaceae*.

Flowers in involucre heads.

Flowers all expanded into rays (ligulate); juice milky.

Fam. 3. *Cichoriaceae*.Flowers all tubular, or the outer expanded into rays; juice very rarely
milky.

Stamens distinct or nearly so.

Fam. 4. *Ambrosiaceae*.

Stamens united by their anthers into a tube around the style.

Fam. 5. *Compositae*.Family 1. **CUCURBITACEAE** B. Juss. **Gourd Family.**

Fruit dehiscent at the apex or bursting irregularly; several-seeded.

1. *Micrampelis*.

Fruit indehiscent, 1-seeded.

2. *Sicyos*.1. **MICRAMPELIS** Raf.1. *MICRAMPELIS LOBATA* (Michx.) Greene. *Wild Balsam Apple*. M. p. 883.

Along rivers and waste places. Summer.

2. SICYOS L. BUR-CUCUMBER.

1. SICYOS ANGULATUS L. M. p. 883. River banks and moist places. Summer.

Family 2. CAMPANULACEAE Juss. Bell-flower Family.

Corolla regular, campanulate or rotate; anthers separate.

Corolla campanulate, rarely rotate; flowers all complete. 1. *Campanula*.

Corolla rotate; earlier flowers cleistogamous. 2. *Specularia*.

Corolla irregular; anthers connate around the style. 3. *Lobelia*.

1. CAMPANULA L. HAREBELL.

Corolla campanulate; flowers solitary, racemose, glomerate or paniced.

Corolla 14-30 mm. long.

Stem leaves linear, the basal orbicular, mostly cordate.

1. *C. rotundifolia*.

Leaves all ovate to lanceolate; plants pubescent or scabrous.

2. *C. rapunculoides*.

Corolla 4-12 mm. long.

3. *C. aparinoides*.

Corolla rotate; flowers spicate.

4. *C. Americana*.

1. CAMPANULA ROTUNDIFOLIA L. *Harebell*. M. p. 884. Rocky shaded banks. Summer.

Bucks—Nockamixon (Cr.), Durham Rocks (Fr.), cliffs of Delaware, Point Pleasant (Ws.). *Montgomery*—Conshohocken (Sa.). *Lancaster*—Octoraro Creek, southern part of county (Pr.). *Berks*—(P.). *Lehigh*—Rockdale (Kr.). *Northampton*—(P.).

Mercer—Trenton, Princeton (C.). *Hunterdon*—Milford (C.).

2. CAMPANULA RAPUNCULOIDES L. M. p. 885. Roadsides and fields. Summer.

3. CAMPANULA APARINOIDES L. *Marsh Bell Flower*. M. p. 885. Wet, grassy grounds. Summer.

4. CAMPANULA AMERICANA L. *Tall Bell Flower*. M. p. 885. Moist, rich soil. Summer.

Philadelphia—Bartram's Garden (Ja.) (Mac.). *Bucks*—Nockamixon (Fr.), bank of Delaware, Nashaminy (Ws.). *Montgomery*—Shannonville (Cr.), Bryn Mawr (Gi.), Skippack Creek, Sumneytown (VP.). *Delaware*—Williamson (Ke.), Ridley Creek (B. Sm.). *Chester*—Valley Forge (Ke.), Phoenixville (Me.). *Lancaster*—Paradise (St.), Peach Bottom (W. Tr.).

Gloucester—Swedesboro (Li.). *Hunterdon*—Stockton (C.).

2. SPECULARIA Heist.

1. SPECULARIA PERFOLIATA (L.) A. DC. *Venus's Looking-glass*. M. p. 886. Sterile, open ground. Summer.

3. LOBELIA L.

Terrestrial plants of wet or dry soil; stem leafy.

Corolla-tube 10-25 mm. long.

Flowers bright scarlet (rarely white); corolla-tube 20-25 mm. long.

1. *L. cardinalis*.

Flowers blue, white, or blue and white; corolla-tube 10-15 mm. long.

Leaves glabrous or sparingly pubescent. 2. *L. syphilitica*.

Leaves densely puberulent; calyx hirsute; auricles small.

3. *L. puberula*.

Corolla-tube only 4-8 mm. long.

Stems mostly simple; flowers in terminal spike-like racemes.

4. *L. spicata*.

Stems mostly paniculately branched; flowers in loose racemes.

Stem stout, pubescent; leaves ovate or oblong, dentate.

5. *L. inflata*.

Stem slender, glabrous; stem-leaves narrow, the basal wider.

Pedicels mostly longer than the flowers, 2-bracteolate near the middle.

6. *L. Kalmii*.

Pedicels not longer than flowers, not bracteolate, or only so at the base.

Corolla 5-7 mm. long; calyx-tube hemispheric in fruit.

7. *L. Nuttallii*.

Corolla 9-11 mm long; calyx-tube turbinate.

8. *L. Canbyi*.

1. *LOBELIA CARDINALIS* L. *Cardinal-flower*. M. p. 888. Low grounds. Summer.
2. *LOBELIA SYPHILITICA* L. M. p. 888. Low grounds. Summer and fall.
3. *LOBELIA PUBERULA* Michx. M. p. 888. Moist, sandy ground. Autumn.
Chester—London Grove, *L. L. Smith* (B. Sm.). *Lancaster*—Pleasant Grove (Ca.), New Texas (P.).
Salem—Mannington (C.), Course Landing (He.), Woodstown (Wa.).
Cumberland—Haleyville (C.). *Cape May*—Petersburg (Pr.), Cape May (U. C. S.) (Te.). *Atlantic*—Atlantic City (He.). *Monmouth*—Freehold (C.). *Mercer*—Lawrenceville Landing (C.), Princeton (Te.).
New Castle—Frequent.
4. *LOBELIA SPICATA* Lam. M. p. 888. Moist or dry, gravelly or sandy soil. Summer.
5. *LOBELIA INFLATA* L. *Indian Tobacco*. M. p. 889. Dry, open fields. Summer and fall.
6. *LOBELIA KALAMII* L. M. p. 889. Wet banks or meadows. Summer.
Lancaster—Near Lancaster (Ca.), Dillerville Swamp (P.).
7. *LOBELIA NUTTALLII* R. & S. M. p. 889. Sandy swamps. Summer.
Bucks—Tullytown, Bristol, *Mart.* (B. C.). *Delaware*—Tinicum (Fu.) B. Sm.).
New Jersey—Pine-barrens, frequent.
8. *LOBELIA CANBYI* A. Gray. M. p. 889. Wet places. Summer.
New Jersey—Pine-barrens (C.).

Family 3. CICHORIACEAE Reichenb. Chicory Family.

Pappus of scales, or of scales and bristles.

Flowers blue or white; pappus of blunt scales.

1. *Cichorium*.

Flowers yellow.

Pappus none; achenes 20-30-nerved.

2. *Lapsana*.

Pappus of rounded scales, with or without an inner series of bristles.

3. *Adopogon*.

Pappus, at least some of it, of plumose bristles.

Plume-branches of the pappus not interwebbed.

Flowers yellow; plants scapose, the leaves basal.

4. *Leontodon*.

Flowers yellow; plants leafy-stemmed.

5. *Picris*.

Plume-branches of the pappus interwebbed.

6. *Tragopogon*.

Pappus of simple bristles.

Achene spinulose, or with short processes near the summit.

7. *Taraxacum*.

Achenes smooth or papillose, not spinulose toward the summit.

Achenes flattened.

Achenes truncate, not beaked; flowers yellow. 8. *Sonchus*.

Achenes narrowed at the summit or beaked; flowers blue or yellow. 9. *Lactuca*.

Achenes cylindric or prismatic.

Achenes narrowed at the base, narrowed or beaked at the summit; flowers yellow. 10. *Crepis*.

Achenes narrowed at the base, otherwise columnar, truncate (except two species of *Hieracium*).

Flowers yellow, orange or red. 11. *Hieracium*.

Flowers white, cream-colored or purple. 12. *Nabalis*.

1. CICHORIUM L. SUCCORY. CHICORY.

1. CICHORIUM INTYBUS L. M. p. 891. Roadsides, fields and waste places. Summer.

2. LAPSANA L.

1. LAPSANA COMMUNIS L. *Nipplewort*. M. p. 891. Roadsides and waste places. Summer.

Philadelphia—Greenwich Point, I. Burk (Fu.) (He.). *Lancaster*—(P.). *Northampton*—Easton (Ca.).

Camden—Kaighn's Point (Ja.) (Te.). *Mercer*—Princeton (C.).

3. ADOPOGON Neck. DWARF DANDELION.

Stem 1-leaved and branched above, bearing 2-6 heads.

Scape naked, monocephalous.

1. *A. Virginicum*.

2. *A. Carolinianum*.

1. ADOPOGON VIRGINICUM (L.) Kuntze. *Cynthia*. M. p. 892. Moist banks. Summer.

2. ADOPOGON CAROLINIANUM (Walt.) Britton. *Dwarf Dandelion*. M. p. 892. Dry, sandy soil. Spring and summer.

4. LEONTODON L.

Plant nearly glabrous; scape commonly branched; pappus-bristles all plumose.

1. *L. autumnale*.

Plant somewhat hirsute; scape simple; outer pappus of outer achenes simple. 2. *L. nudicaule*.

1. LEONTODON AUTUMNALE L. *Fall Dandelion*. M. p. 893. Fields and along roadsides. Summer and fall.

Philadelphia—On and about ballast (P.).

Burlington—Moorestown (Br.). *Camden*—Camden, ballast (C.).

Monmouth—Freehold (C.).

New Castle—10th and Rodney Streets, Wilmington, Canby.

2. LEONTODON NUDICAULE (L.) Porter. M. p. 893. Ballast. Summer and fall.

5. PICRIS L.

1. PICRIS HIERACIODES L. M. p. 894. Waste places and ballast. Summer.

Philadelphia—Greenwich Point (Te.). *Delaware*—Upper Providence (Fu.). *Northampton*—Seidersville (P.).

6. TRAGOPOGON L. GOAT'S-BEARD.

Flowers yellow; involucre bracts equalling or shorter than the rays.

1. *T. pratensis*.

Flowers purple; involucre bracts much longer than the rays.

2. *T. porrifolius*.

1. TRAGOPOGON PRATENSIS L. *Yellow Goat's-beard*. M. p. 895. Fields and waste places. Summer and fall.

Delaware—Wawa.

2. TRAGOPOGON PORRIFOLIUS L. *Oyster-plant, Salsify*. M. p. 895. Escaped from cultivation. Summer and fall.

Philadelphia—Girard Point (Ja.), "Neck" (VP.). *Bucks*—Sellersville (Fr.) (Ja.). *Montgomery*—Betzwood (Br.), Ivy Rock (Wn.). *Delaware*—Swarthmore (Pr.) (Wa.), Concord (W. Tr.). *Northampton*—(P.).

Monmouth—Freehold (C.). *Hunterdon*—Rosemont (C.).

7. TARAXACUM Hall. DANDELION.

Achenes greenish.

1. *T. Taraxacum*.

Achenes red.

2. *T. erythrospermum*.

1. TARAXACUM TARAXACUM (L.) Karst. M. p. 896. Fields and waste places. All year.

2. TARAXACUM ERYTHROSPERMUM Andr. M. p. 896. Fields and woods. Spring.

8. SONCHUS L. SOW-THISTLE.

Involucre glandular-pubescent; heads nearly 25 mm. high. 1. *S. arvensis*.

Involucre glabrous; heads 12-16 mm. high.

Auricles of leaves acute, achenes striate and transversely wrinkled.

2. *S. oleraceus*.

Auricles rounded; achenes ribbed, not transversely wrinkled.

3. *S. asper*.

1. SONCHUS ARVENSIS L. M. p. 897. Salt marshes and ballast. Summer.

Philadelphia—"Neck," *Louis Schneider* (Ja.). *Northampton*—(P.).

Camden—Kaighn's Point. *Cape May*—Cape May (Te.). *Monmouth*—

Asbury Park (Br.) (Fu.) (Wn.), *Atlantic Highlands*, *Scobyville* (C.).

New Castle—Corn-fields near Collins' Beach, *Commons* and *Tatnall*.

2. SONCHUS OLERACEUS L. *Common Sow-thistle*. M. p. 897. Waste places and cultivated grounds. Summer and fall.

3. SONCHUS ASPER (L.) All. M. p. 897. Waste places. Summer.

9. LACTUCA L. LETTUCE.

Pappus bright white.

Leaves spiny-margined and often with spiny or hispid midribs; flowers yellow.

Heads 6-12-flowered; involucre very narrow, 8-12 mm. high.

1. *L. virosa*.

Heads 12-20-flowered; involucre broader.

4. *L. sagittifolia*.

Leaves neither spiny-margined nor with spiny midribs (rarely spinulose in No. 3).

Achenes very thin, flat, contracted into filiform or tapering beaks.

Leaves, or some of them, pinnatifid.

Plant glabrous throughout, 1-3 mm. high.

2. *L. Canadensis*.

- Leaves, at least their midribs, hirsute. 3. *L. hirsuta*.
 Leaves entire or dentate, none of them pinnatifid.
 Leaves oblong or oblong-lanceolate; achene longer than the beak. 4. *L. sagittifolia*.
 Leaves lanceolate; achene about equalling the beak. 2. *L. Canadensis*.
 Achenes beakless or with short necks, thickish; flowers blue.
 Leaves oblong to ovate, acuminate, dentate. 5. *L. villosa*.
 Leaves pinnatifid, the terminal segment commonly triangular. 6. *L. Floridana*.
 7. *L. spicata*.

Pappus brown; flowers blue to white.

1. *LACTUCA VIROSA* L. *Prickly Lettuce*. M. p. 898. Waste grounds and roadsides. Summer.

Philadelphia—Germantown (Me.), flat below Philadelphia, *L. L. Smith* (B. Sm.), Fairmount Park (Wn.). *Bucks*—Sellersville, Quakertown (Fr.), New Hope (Ws.). *Montgomery*—Shannonville (Cr.), Lafayette (Wn.). *Chester*—Valley Forge (Ja.). *Lancaster*—Peach Bottom (Ca.). *Northampton*—Easton, Porter (B. C.).

Camden—Kaighn's Point (Ja.) (Wn.) (Li.). *Gloucester*—Repaupo (Li.).

New Castle—McCollough Iron Co., Jackson and Sharp, 7th and Church.

2. *LACTUCA CANADENSIS* L. *Wild Lettuce*. M. p. 898. Moist, open places. Summer and fall.

- 2a. *LACTUCA CANADENSIS MONTANA* Britton. M. p. 898. Moist, open places. Summer and fall.

Bucks—Point Pleasant, Dr. N. L. Britton (Fr.).

3. *LACTUCA HIRSUTA* Muhl. M. p. 898. Dry soil. Summer.

Philadelphia—Byberry, Mart. (B. C.). *Bucks*—Near Sellersville (Fr.). *Burlington*—Vincentown (C.). *Cape May*—Anglesea (Li.), Wildwood (Wn.). *Atlantic*—Atlantic City (C.). *Monmouth*—Spring Lake (C.), Asbury Park (Wn.).

4. *LACTUCA SAGITTIFOLIA* Ell. M. p. 898. Dry, open soil. Summer.

Philadelphia—Byberry, Mart. (B. C.). *Bucks*—Near Sellersville (Fr.), Solebury (Ws.). *Delaware*—Lansdowne (Pe.), Swarthmore (Pr.). *Lancaster*—(P.). *Northampton*—Easton, Porter (B. C.).

Gloucester—Mickleton, frequent (He.), Swedesboro (Li.). *Monmouth*—Sandy Hook (C.), Asbury Park (Wn.).

New Castle—Summit Bridge, etc., Commons.

5. *LACTUCA VILLOSA* Jacq. M. p. 899. Thickets. Summer.

Philadelphia—Byberry, Mart. (B. C.). *Bucks*—Rock Hill (Fr.), Solebury (Ws.). *Montgomery*—Shannonville (Cr.). *Delaware*—Mineral Hill (He.), Valley of Darby Creek, Dr. Geo. Smith (B. Sm.), Concord (W. Tr.). *Lancaster*—York Furnace (P.).

Gloucester—Swedesboro (Li.). *Somerset*—Rocky Hill (C.). *Hunterdon*—Rosemont (C.).

New Castle—Frequent.

6. *LACTUCA FLORIDANA* (L.) Gaertn. M. p. 899. Rich soil. Summer.

Bucks—Argus (Fr.). *Delaware*—Near Coopertown, Dr. Geo. Smith (B. Sm.). *Chester*—Mortonville (St.), Doe Run (Wn.). *Lancaster*—(P.). *Northampton*—(P.).

Burlington—Bordentown (C.). *Cape May*—Anglesea (Li.). *Hunterdon*—Rosemont, Bull Island at Frenchtown (C.).

New Castle—Scarce.

7. *LACTUCA SPICATA* (Lam.) Hitchc. M. p. 899. Low grounds. Summer and fall.

Philadelphia—Wissahickon (VP.), Fairmount Park (Wn.). *Bucks*—Rock Hill (Fr.). *Delaware*—Near Media (B. Sm.). *Chester*—(P.). *Lancaster*—York Furnace (He.). *Dauphin*—Steelton (Wn.). *Northampton*—Easton, Porter (B. C.).

New Jersey—Frequent.

New Castle—Common.

10. *CREPIS* L. HAWK'S-BEARD.

Stem leaves narrow, revolute-margined, sessile. 1. *C. tectorum*.
Stem leaves lanceolate, clasping, not revolute-margined. 2. *C. virens*.
Involucre 6-8 mm. high; achenes 10-striate. 3. *C. biennis*.
Involucre 8-12 mm. high; achenes 13-striate.

1. *CREPIS TECTORUM* L. M. p. 902. Fields and ballast. Summer.
Bucks—Sellersville (Fr.).
2. *CREPIS VIRENS* L. M. p. 902. Ballast. Summer.
Northampton—Easton (P.).
Camden—Kaighn's Point (Ja.).
3. *CREPIS BIENNIS* L. M. p. 902. Waste places. Summer.
Chester—(P.). *Northampton*—Easton (P.).

11. *HIERACIUM* L. HAWKWEED.

Flowering stem leafless or with 1-5 leaves; achenes columnar or oblong, truncate.

Stem scapose, with a single head only; principal bracts in 1-3 series; introduced.

Heads corymbose or paniculate; principal bracts in 1-3 series.

Leaves mostly entire, spatulate to oblong; heads corymbose; principal bracts of the involucre in 2-3 series; introduced.

2. *H. aurantiacum*.

Leaves, at least some of them, denticulate, mostly obovate or oval; heads corymbose-paniculate; principal bracts in 1 series; natives.

Stem glabrous or nearly so; leaves usually purple-veined.

3. *H. venosum*.

Stem pilose below; leaves green.

4. *H. Marianum*.

Flowering stem abundantly leafy, at least below.

Principal bracts of the involucre in 2-4 series; heads corymbose.

5. *H. Canadense*.

Principal bracts in 1 series; heads small, paniculate or racemose.

Achenes columnar at maturity; truncate.

Plant nearly or quite glabrous except towards the base; heads 15-20-flowered.

6. *H. paniculatum*.

Plant scabrous or glandular; heads 15-50-flowered.

7. *H. scabrum*.

Achenes spindle-shaped or with tapering summit at maturity.

8. *H. Gronovii*.

1. *HIERACIUM PILOSELLA* L. M. p. 903. Door-yards and fields. Summer.
Northampton—Easton (P.).

2. *HIERACIUM AURANTIACUM* L. M. p. 904. Roadsides and fields. Summer.
Philadelphia—Fairmount Park (Gi.).
Camden—Grenloch (Li.).
3. *HIERACIUM VENOSUM* L. *Rattlesnake-weed*. M. p. 904. Dry woods and thickets. Summer and fall.
4. *HIERACIUM MARIANUM* Willd. M. p. 904. Open woods and clearings. Summer.
Bucks—Springfield near Sellersville (Fr.). *Montgomery*—Shannonville (Cr.). *Delaware*—Whetstone Run, Marple (B. Sm.). *Chester*—Falls of French Creek (Cr.). *Lancaster*—(P.). *Northampton*—Easton, Porter (B. C.).
Camden—Grenloch, Geo. M. Beringer (B. C.). *Gloucester*—Swedesboro (Li.). *Cape May*—Five-mile Beach (Ja.), Avalon, Dr. J. B. Brinton (He.). *Monmouth*—Seabright (Ke.). *Hunterdon*—Rosemont (C.).
5. *HIERACIUM CANADENSE* Michx. M. p. 905. Dry woods. Summer.
Bucks—Near Riegelsville (Fr.). *Montgomery*—Perkiomen (Cr.), Willow Grove (U. C. S.). *Lehigh*—Lehigh Mountain (Kr.). *Northampton*—Bethlehem (Pr.).
6. *HIERACIUM PANICULATUM* L. M. p. 905. Dry woods. Summer.
7. *HIERACIUM SCABRUM* Michx. M. p. 905. Dry, open woods. Summer.
8. *HIERACIUM GRONOVII* L. M. p. 905. Dry soil. Summer.

12. *NABALUS* Cass. RATTLESNAKE-ROOT.

Heads 5-7-flowered; involucre very narrow, light green, 2 mm. thick; pappus light straw-color. 1. *N. altissimus*.

Heads 8-16-flowered; involucre broader, green, purple or glaucous, 3-6 mm. thick.

Pappus deep cinnamon-brown.

2. *N. albus*.

Pappus straw-color or light brown.

Inflorescence paniculate.

Involucral bracts with some stiff hairs, obviously shorter than the pappus; panicle-branches divergent. 3. *N. serpentarius*.

Involucral bracts glabrous, equalling the pappus; panicle-branches ascending or erect. 4. *N. trifoliolatus*.

1. *NABALUS ALTISSIMUS* (L.) Hook. M. p. 906. Rich, moist woods. Summer and fall.
2. *NABALUS ALBUS* (L.) Hook. *White Lettuce*. M. p. 907. Woods. Late summer.
3. *NABALUS SERPENTARIUS* (Pursh.) Hook. *Lion's-foot*, *Gall-of-the-earth*. M. p. 907. Fields and thickets. Summer and fall.
4. *NABALUS TRIFOLIOLATUS* Cass. M. p. 907. Woods and thickets. Late summer and fall.
Bucks—(P.). *Montgomery*—(P.). *Delaware*—(P.). *Northampton*—(P.).
5. *NABALUS VIRGATUS* (Michx.) DC. M. p. 907. Sandy pine-barrens. Autumn.
Burlington—Quaker Bridge, Batsto, Pleasant Mills (C.), Atsion (Le.), Woodmansie (Sa.), Brown Mills (Sts.). *Camden*—Jackson (C.), Winslow Junction, Mart. (B. C.), Cedar Brook (Cr.). *Cape May*—Woodbine

(Br.), Cape May (Li.). *Atlantic*—Egg Harbor, May's Landing (C.).
Ocean—Manchester (C.).

Family 4. **AMBROSIACEAE** Reichenb. **Rag-weed Family.**

Staminate and pistillate flowers in the same heads; involucre of a few rounded bracts. 1. *Iva*.

Staminate and pistillate flowers in separate heads, the staminate mostly uppermost; involucre of the pistillate heads bur-like or nut-like.

Involucral bracts of the staminate heads united. 2. *Ambrosia*.

Involucral bracts of the staminate heads separate; involucre of pistillate an oblong bur. 3. *Xanthium*.

1. **IVA** L.

1. *IVA FRUTESCENS* L. *Marsh Elder, Highwater-shrub.* M. p. 909. Salt marshes. Summer.

2. **AMBROSIA** L. **RAGWEED.**

Leaves opposite, palmately 3-5-lobed or undivided; receptacle naked.

1. *A. trifida*.

Leaves opposite and alternate, 1-2-pinnatifid; receptacle chaffy.

2. *A. artemisiaefolia*.

1. *AMBROSIA TRIFIDA* L. *Great Ragweed.* M. p. 910. Moist soil. Summer and fall.

1a. *AMBROSIA TRIFIDA INTEGRIFOLIA* (Muhl.) T. & G. M. p. 910. Moist soil. Summer and fall.

2. *AMBROSIA ARTEMISAEFOLIA* L. *Rag-weed, Hog-weed.* M. p. 910. Cultivated fields and waste places. Summer and fall.

3. **XANTHIUM** L. **CLOTBUR. BURWEED. COCKLEBUR.**

Leaves lanceolate, not cordate; axils bearing 3-divided spines.

1. *X. spinosum*.

Leaves orbicular or broadly ovate, cordate, or truncate; axils not spiny.

Bur 12-20 mm. long, usually nearly glabrous; beaks straight or nearly so.

2. *X. glabratum*.

Bur 5-30 mm. long; beaks hooked or incurved.

Body of the bur oblong, twice as long as thick or more.

Bur and its spines merely puberulent and glandular or with a few hispid hairs.

Prickles very dense, slender; leaves thin, sharp-toothed.

3. *X. Pennsylvanicum*.

Prickles scattered, stout; leaves firm, bluntly-toothed.

4. *X. Canadense*.

Bur or its prickles very hispid.

5. *X. commune*.

Body of the bur oval to ovoid, not twice as long as thick.

6. *X. echinatum*.

1. *XANTHIUM SPINOSUM* L. M. p. 912. Waste places. Autumn.

Philadelphia—Philadelphia, *Mart.* (B. C.), Schuylkill above Manayunk (He.), Angora (Ws.). *Bucks*—Opposite Trenton, *Moyer*; near Bristol, *Mart.* (Fr.). *Delaware*—Tinicum Twp. (Fr.), Valley of Darby Creek (B. Sm.), Concord (W. Tr.). *Chester*—(P.). *Lancaster*—York Furnace. *Northampton*—(P.).

Camden—Frequent in towns and villages.

New Castle—City streets and gutters, Wilmington, New Castle, etc.

2. *XANTHIUM GLABRATUM* (DC.) Britton. M. p. 912. Waste grounds. Autumn.
3. *XANTHIUM PENNSYLVANICUM* Wallr. Open places. Autumn.
Northampton—(P.).
4. *XANTHIUM CANADENSE* Mill. M. p. 912. Waste ground. Autumn.
Delaware—Upper Darby, Chad's Ford (B. Sm.).
5. *XANTHIUM COMMUNE* Britton. M. p. 912. Waste ground. Autumn.
Delaware—Upper Darby (B. Sm.).
6. *XANTHIUM ECHINATUM* Murr. M. p. 913. River shores, sea-beaches and waste places. Autumn.

Family 5. COMPOSITAE. Thistle Family.

Anthers not tailed at the base; stigmatic lines of the style-branches only at the base, or not extending beyond the middle; flowers all tubular and perfect, never yellow; rays none.

Style branches filiform or subulate, hispidulous; receptacle naked.

Tribe 1. *Vernonieae*.

Style branches thickened upward, obtuse, papillose.

Tribe 2. *Eupatorieae*.

Anthers tailed at the base, unappendaged at the tip; heads small; rays none (except in *Inula*, where they are large and yellow).

Tribe 4. *Inuleae*.

Anthers not tailed at the base; stigmatic lines of the style-branches in the perfect flowers extending to the summit; flowers tubular only, or tubular and radiate, often yellow.

1. Receptacle naked (see also No. 39 of Tribe 6).

a. Bracts of the involucre usually well imbricated.

Style branches of the perfect flowers flattened, with terminal appendages.

Tribe 3. *Astereae*.

Style-branches truncate, or with hairy tips.

Bracts of the involucre herbaceous.

Tribe 6. *Helenieae*.

Bracts of the involucre dry and scarious.

Tribe 7. *Anthemideae*.

b. Bracts little imbricated or not at all; pappus of soft bristles.

Tribe 8. *Senecioneae*.

2. Receptacle chaffy.

Bracts of involucre herbaceous or foliaceous; not scarious.

Tribe 5. *Heliantheae*.

Bracts of the involucre dry, scarious.

Tribe 7. *Anthemideae*.

Anthers long-tailed at the base, with elongated appendages at the tip; heads large; rays none. (In *Centaurea* often with enlarged marginal flowers; bracts imbricated.)

Tribe 9. *Cynareae*.

Tribe 1. VERNONIEAE.

Pappus double; heads not glomerate.

1. *Vernonia*.

Pappus a single series of bristles; heads glomerate.

2. *Elephantopus*.

Tribe 2. EUPATORIEAE.

Achenes 3-5-angled, not ribbed.

Pappus of 5 broad, obtuse scales; aquatic herb with linear-whorled leaves.

3. *Sclerolepis*.

Pappus of numerous capillary bristles.

Involucre of more than 4 bracts; erect herbs.

4. *Eupatorium*.

Involucre of 4 bracts; twining, herbaceous vines.

5. *Willughbaeya*.

Achenes 8-10-ribbed, or 8-10-striate.

Bracts of the involucre strongly striate-nerved; heads panicled or corymbed.

6. *Kuhnia*.

Bracts of the involucre faintly striate, if at all; heads spiked or racemed.

7. *Lacinaria*.

Tribe 3. ASTEREEAE.

A. Ray-flowers yellow (white in one species of *Solidago*) or wanting; plants not dioecious.

Pappus of scales, or awns, or wanting, never of numerous capillary bristles.

8. *Grindelia*.

Pappus of either the radiate or tubular flowers, or both, of numerous capillary bristles, with or without an outer series of shorter ones, or of scales.

Pappus, at least of the disk-flowers, double, an inner series of capillary bristles, and an outer one of scales or short bristles; heads large.

Achenes of the ray-flowers thick, the pappus obsolete, or of a few caducous bristles; achenes of the disk-flowers flat.

9. *Heterotheca*.

Achenes of both ray-flowers and disk-flowers flattened.

10. *Chrysopsis*.

Pappus wholly of capillary bristles.

Receptacle alveolate; rays mostly not more numerous than the disk-flowers.

11. *Solidago*.

Receptacle fimbriate; rays more numerous than the disk-flowers; heads corymbose-paniculate.

12. *Euthamia*.

B. Ray-flowers present, not yellow.

Pappus a mere crown, or of a few awns or bristles, or wanting, never of numerous capillary bristles.

Receptacle conic.

13. *Bellis*.

Receptacle flat, or somewhat convex.

14. *Boltonia*.

Pappus of numerous capillary bristles.

Pappus a single series of capillary bristles; sometimes with an outer series of shorter ones.

Bracts of the involucre in 2 to many series.

Involucre narrow, its bracts firm; rays few, white.

15. *Sericocarpus*.

Involucre turbinate to hemispheric, bracts mostly thin; rays usually numerous, white to purple.

16. *Aster*.

Bracts of the involucre in only 1 or 2 series, very narrow; heads mostly long-peduncled.

Rays longer than the diameter of the disk.

17. *Erigeron*.

Rays not longer than the diameter of the disk; heads very small, panicled.

18. *Leptilon*.

Pappus distinctly double, the inner bristles long, the outer shorter.

Leaves lanceolate, ovate, or obovate; rays white.

19. *Doellingeria*.

Leaves narrowly linear; rays violet.

20. *Ionactis*.

C. Ray-flowers none; dioecious shrubs; pappus capillary.

21. *Baccharis*.

Tribe 4. INULAE.

Heads small, rays none; flowers white or whitish.

Receptacle chaffy.

22. *Gifola*.

Receptacle naked.

Bracts of the involucre not scarious; plants pubescent or glabrous, not woolly.

23. *Pluchea*.

Bracts of the involucre scarious, mostly white or pink; plants woolly.

Plants diœcious or polygamo-diœcious.

Pappus-bristles of staminate flowers thickened above.

24. *Antennaria*.

Pappus-bristles not thickened; stem leafy.

25. *Anaphalis*.

Plants not diœcious; flowers all fertile.

26. *Gnaphalium*.

Heads large; ray-flowers yellow.

27. *Inula*.

Tribe 5. HELIANTHEAE.

A. Disk-flowers perfect but sterile.

Achenes thick, short, not flattened; pappus none.

28. *Polymnia*.

Achenes flattened.

Ray-flowers in 2 or 3 series; achenes falling away free.

29. *Silphium*.

Ray-flowers in 1 series; achenes adnate to 2 or 3 scales of the receptacle, falling away with them.

30. *Chrysogonum*.

B. Disk-flowers fertile.

Ray-flowers persistent upon the achenes.

31. *Heliopsis*.

Ray-flowers deciduous or none.

Pappus a cup, or crown, or of a few teeth, awns, or bristles.

Achenes, at least those of disk-flowers, not compressed (except in *Verbesina*); scales of the receptacle mostly concave, or clasping.

Scales of the receptacle small; awn-like or bristle-like; rays white, short.

32. *Eclipta*.

Scales of the receptacle broad, larger.

Receptacle conic or columnar.

33. *Rudbeckia*.

Receptacle flat or merely convex.

Achenes not much flattened, not winged nor margined.

34. *Helianthus*.

Achenes of disk-flowers flattened and margined, or winged.

35. *Verbesina*.

Achenes very flat; scales of the receptacle flat, or but slightly concave.

Pappus of 2 short teeth or awns, or a mere border, or none.

36. *Coreopsis*.

Pappus of 2-6 awns or teeth, upwardly or downwardly barbed or hispid.

37. *Bidens*.

Pappus of numerous scales.

38. *Galinsoga*.

Tribe 6. HELENIEAE.

39. *Helenium*.

Tribe 7. ANTHEMIDEAE.

Receptacle chaffy.

Achenes flattened; involucre obovoid to campanulate; heads small.

40. *Achillea*.

Achenes terete; involucre hemispheric; heads large.

41. *Anthemis*.

Receptacle not chaffy, naked, or sometimes hairy.

1. Ray-flowers usually present, sometimes wanting; rays large.

Receptacle flat to hemispheric; bracts of the involucre in several series.

42. *Chrysanthemum*.

Receptacle conic to ovoid; bracts in few series; rays white or none.

43. *Matricaria*.

2. Ray-flowers none; heads small.

Heads corymb; pappus a short crown; flowers yellow.

44. *Tanacetum*.

Heads racemose, spicate, or paniced; pappus none.

45. *Artemisia*.

Tribe 8. SENECEIONEAE.

Leaves all basal; heads on scapes.

Heads solitary; flowers yellow.

46. *Tussilago*.

Heads corymbed; flowers white or purple.

47. *Petasites*.

Leaves opposite; rays yellow.

48. *Arnica*.

Leaves alternate.

Flowers white, whitish or pinkish; rays none.

Marginal flowers pistillate; disk-flowers perfect.

49. *Erechtites*.

Flowers all perfect.

Involucre of about 5 bracts; sap milky.

50. *Mesadenia*.

Involucre of about 12 bracts and several smaller outer ones.

51. *Synosma*.

Flowers yellow; ray-flowers mostly present.

52. *Senecio*.

Tribe 9. CYNAREAE.

Achenes inserted on the receptacle by their bases, not oblique.

Receptacle densely bristly.

Involucral bracts hooked at the tip; leaves not bristly.

53. *Arctium*.

Involucral bracts not hooked; leaves bristly.

54. *Carduus*.

Receptacle fleshy, not bristly.

55. *Onopordon*.

Achenes obliquely inserted on the receptacle.

56. *Centaurea*.

1. VERNONIA Schreb. IRON-WEED.

Involucral bracts with subulate, spreading tips; leaves lanceolate.

1. *V. Novboracensis*.

Involucral bracts short, mucronate, or the upper obtuse; leaves broadly oval or obovate.

2. *V. glauca*.

1. VERNONIA NOVEBORACENSIS (L.) Willd. M. p. 918. Low ground. Summer.

2. VERNONIA GLAUCA (L.) Britton. M. p. 919. Woods. Summer.

2. ELEPHANTOPUS L.

1. ELEPHANTOPUS CAROLINIANUS Willd. *Elephant's-foot*. M. p. 920. Dry woods. Autumn.

Delaware—Chester, Dutton's Mills (Fu.), Williamson, Dr. Emily G. Hunt (He.), Lansdowne (Pe.), Bridgewater (S. Tr.). Lancaster—Peach Bottom (Ca.), McCall's Ferry (Cr.), Susquehanna Valley (Le.).

New Castle—Common.

3. SCLEROLEPIS Cass.

1. SCLEROLEPIS UNIFLORA (Walt.) Porter. M. p. 920. Pine-barrens. Summer.

Burlington—Quaker Bridge. Cape May—Woodbine (Br.), Cape May (Te.). Atlantic—Hammonton, Egg Harbor (U. C. S.) (Sts.).

New Castle—Near Sassafras X-roads, Commons.

4. EUPATORIUM L. THOROUGHWORT.

*Leaves alternate, pinnatifid into filiform segments.

1. *E. capillifolium*.

- **Leaves petioled, verticillate in 3's-6's, or the upper opposite.
 Leaves rugose, pubescent; inflorescence depressed. 2. *E. maculatum*.
 Leaves nearly glabrous; inflorescence pyramidal.
 Leaves sharply serrate. 3. *E. purpureum*.
 Leaves crenate. 4. *E. trifoliatum*.
 ***Leaves opposite (rarely in 3's) or the uppermost alternate.
 †Involucral bracts imbricated in 2 or more series, the outer shorter.
 Leaves, at least the lower, slender-petioled. 5. *E. serotinum*.
 Leaves all sessile, short-petioled or connate-perfoliate.
 Leaves not clasping nor connate-perfoliate.
 Leaves narrowed at the base.
 Bracts of the involucre acute or cuspidate.
 Leaves linear-lanceolate, coarsely toothed, 4-12 mm. wide. 6. *E. leucolepis*.
 Leaves oblong to lanceolate, coarsely toothed, 1-4 cm. wide. 7. *E. album*.
 Bracts of the involucre obtuse.
 Leaves linear, crowded, usually entire, obtuse. 8. *E. hyssopifolium*.
 Leaves lanceolate, oval or oblong, usually serrate. 9. *E. Torreyanum*.
 Leaves rounded, obtuse or truncate at the base.
 Plant glabrous; leaves lanceolate, long-acuminate. 10. *E. sessilifolium*.
 Plants pubescent; leaves ovate to oblong, acute or obtuse.
 Leaves ovate-oblong to lanceolate, mostly rounded at the base, usually obtuse. 11. *E. verbenaeifolium*.
 Leaves broadly ovate, crenate-dentate, mostly truncate at the base, obtusish. 12. *E. rotundifolium*.
 Leaves ovate, dentate, acute. 13. *E. pubescens*.
 Leaves clasping or connate-perfoliate at the base.
 Leaves connate-perfoliate; involucral bracts acute. 14. *E. perfoliatum*.
 Leaves merely clasping; involucral bracts obtuse. 15. *E. resinosum*.
 ††Involucral bracts in 1 or 2 series, all equal or nearly so.
 Receptacle flat; flowers white.
 Leaves thin, 5-12 cm. long, sharply dentate, acuminate. 16. *E. ageratoides*.
 Leaves thickish, 2-5 cm. long, blunt-toothed, acute or obtusish. 17. *E. aromaticum*.
 Receptacle conic; flowers blue or violet. 18. *E. coelestinum*.
1. *EUPATORIUM CAPILLIFOLIUM* (Lam.) Small. *Dog-fennel*. M. p. 921. Ballast. Autumn.
 Philadelphia—Philadelphia Navy Yard, C. F. Parker (B. C.).
 2. *EUPATORIUM MACULATUM* L. *Joe-pye-weed*. M. p. 921. Moist soil. Late summer.
 3. *EUPATORIUM PURPUREUM* L. *Joe-pye-weed*, *Trumpet-weed*. M. p. 921. Low grounds. Late summer.
 4. *EUPATORIUM TRIFOLIATUM* L. M. p. 921. Moist soil. Summer.
 Delaware—Tinicum, Dr. Geo. Smith (B. Sm.). *Northampton*—Easton, Dr. T. C. Porter (B. Sm.).
 5. *EUPATORIUM SEROTINUM* Michx. M. p. 922. Ballast. Autumn.
 Philadelphia—Philadelphia Navy Yard, C. F. Parker (B. C.). *Delaware*—Darby Creek, Adingham (St.).
 6. *EUPATORIUM LEUCOLEPIS* T. & G. M. p. 922. Sandy bogs. Late summer.

Burlington—Quaker Bridge (C.). *Camden*—Atco (Fr.). *Atlantic*—Mullica River (C.), Hammonton (Cr.) (He.), Egg Harbor. *Cape May*—Woodbine (VP.). *Ocean*—Forked River, Manchester (C.), Tuckerton (W. Tr.).

7. *EUPATORIUM ALBUM* L. M. p. 922. Sandy and barren places. Late summer.

New Jersey—Pine-barrens, frequent.

New Castle—Newark, *Kilvington*; P. Clarke's (road to Christiania), *Tatnall*; *Townsend*, *Canby*.

- 7a. *EUPATORIUM ALBUM SUBVENOSUM* A. Gray. M. p. 922. Sandy and barren places. Late summer.

Burlington—Atsion, Dr. J. B. Brinton (He.). *Atlantic*—Pancoast Mills (C.).

8. *EUPATORIUM HYSSOPIFOLIUM* L. M. p. 922. Sterile soil. Late summer.

Delaware—Thatcher's Swamp (Fu.), Chad's Ford (Te.). *Lancaster*—*Lancaster*, *Mart.* (B. C.), McCall's Ferry (Ca.).

New Jersey—Pine-barrens, frequent.

New Castle—Cedar Swamp, Sassafras X-roads, *Commons*; Brandywine Head, Naylor's (now Lea's).

9. *EUPATORIUM TORREYANUM* Short. M. p. 922. Dry soil. Summer.

Lancaster—(P.).

10. *EUPATORIUM SESSILIFOLIUM* L. *Upland Bonaset.* M. p. 922. Copses and banks. Late summer.

11. *EUPATORIUM VERBENAEFOLIUM* Michx. M. p. 923. Moist soil. Late summer.

Bucks—Tullytown (Cr.), near Bristol (Fr.). *Delaware*—Tinicum (B. Sm.). *Chester*—(P.). *Lancaster*—(P.). *Lehigh*—Black River, Salsburg (Kr.). *Northampton*—(P.).

New Jersey—Frequent, especially near the coast.

New Castle—Frequent.

- 11a. *EUPATORIUM VERBENAEFOLIUM SAUNDERSII* Porter. M. p. 923. Low grounds. Late summer.

Montgomery—Willow Grove (Sa.). *Delaware*—Tinicum (P.).

12. *EUPATORIUM ROTUNDIFOLIUM* L. M. p. 923. Dry soil. Summer.

Bucks—Bristol (Fr.). *Montgomery*—(P.). *Delaware*—Tinicum, Ridley, Darby (Fu.). *Lancaster*—(P.).

New Jersey—Pine-barrens, frequent.

New Castle—Not rare.

13. *EUPATORIUM PUBESCENS* Muhl. M. p. 923. Dry soil. Summer.

Montgomery—Edge Hill (Re.). *Delaware*—Tinicum (W. Tr.). *Lancaster*—York Furnace (Ke.).

Burlington—Atsion (Le.), Moorestown (Sts.). *Camden*—Clementon (Ja.), Lindenwold (VP.). *Gloucester*—Mickleton (He.), Swedesboro (Li.). *Salem*—Jericho (C.). *Cumberland*—Bridgeton (C.). *Atlantic*—Hammonton (Cr.), New Germany (Fr.), Egg Harbor (Wn.). *Ocean*—Toms River (Ha.). *Monmouth*—Sea Girt (C.).

New Castle—Stanton, Michener; Ogletown.

14. *EUPATORIUM PERFOLIATUM* L. *Boneset*. M. p. 923. Low grounds. Summer.
15. *EUPATORIUM RESINOSUM* Torr. M. p. 923. Wet pine-barrens. Late summer.
Burlington—Atsion, Bear Swamp (St.), Brown Mills (Sta.). *Camden*—Atco (He.), Ancora (Li.). *Gloucester*—Malaga (C.). *Atlantic*—Hammononton, New Germany (Fr.), May's Landing (Le.), Egg Harbor (Wn.). *Ocean*—Manchester, Whiting (C.), Toms River, *Dr. Geo. Smith* (Fu.), Forked River (Ja.). *Monmouth*—Ocean Beach (C.).
16. *EUPATORIUM AGERATOIDES* L. f. *White Snake-root*. M. p. 923. Rich woods. Summer and autumn.
17. *EUPATORIUM AROMATICUM* L. M. p. 924. Dry soil and copses near the coast. Late summer.
Montgomery—(P.). *Delaware*—On serpentine, *Dr. Geo. Smith* (Fu.), Williamson (Ja.) (Wn.). *Chester*—On serpentine, *Dr. Geo. Smith* (Fu.), West Nottingham Twp. (Le.). *Lancaster*—York Furnace (Cr.). *Dauphin*—Steelton (Wn.).
Burlington—Burlington, Pemberton (C.), Medford (Sta.). *Gloucester*—Swedesboro (Li.). *Atlantic*—Ashland (C.). *Monmouth*—Squan Village, Freehold (C.).
New Castle—Not common.
18. *EUPATORIUM COELESTINUM* L. *Mist-flower*. M. p. 924. Moist soil. Autumn.
Philadelphia—Byberry, *Mart.* (B. C.). *Bucks*—Rock Hill (Fr.). *Delaware*—Media (Fu.) (B. Sm.). *Chester*—(P.). *Lancaster*—York Furnace, Susquehanna Valley (Le.), Columbia (Pe.), Safe Harbor (Wn.).
Gloucester—Swedesboro (Li.). *Cape May*—Cape May.
New Castle—Red Clay Creek, McMinns, Elliott's Run, *Tatnall*; between Chestnut and Iron Hill, *Commons* and *Tatnall*; between Townsend and Vandyke, *Commons* and *Tatnall*.

5. WILLUGBAEYA Neck.

1. *WILLUGBAEYA SCANDENS* (L.) Kuntze. *Climbing Boneset*. M. p. 924. Copses along streams. Summer.

6. KUHNIA L.

1. *KUHNIA EUPATORIODES* L. M. p. 925. Dry soil. Autumn.
Philadelphia—Brook's Mills (W. Tr.). *Montgomery*—Norristown, *E. Dittenbaugh* (B. C.), Shannonville (Cr.). *Delaware*—Radnor, *John Evans* (B. Sm.). *Chester*—On Valley Creek (Pr.). *Lancaster*—Near Lancaster (Ca.). *Lehigh*—(P.). *Northampton*—Easton, *Porter* (B. C.).
Burlington—Birmingham (C.), Medford (St.). *Atlantic*—Egg Harbor, *I. Burk* (He.). *Middlesex*—New Brunswick (C.).

7. LACINARIA Hill. BUTTON SNAKEROOT. BLAZING-STAR.

- Involucre hemispheric, 10-25 mm. broad; 15-45-flowered; heads peduncled.
 1. *L. scariosa*.
 Involucre oblong, 4-8 mm. broad, 5-15-flowered.
 2. *L. spicata*.
 Involucre narrowed at base; bracts usually very punctate; heads peduncled.
 3. *L. graminifolia*.

1. *LACINARIA SCABIOSA* (L.) Hill. M. p. 926. Dry soil. Autumn.
Berks—(P.).
Atlantic—Hammonton (Cr.). *Monmouth*—Keyport (C.).
New Castle—Fulton's Mills.
2. *LACINARIA SPICATA* (L.) Kuntze. M. p. 926. Moist grounds. Autumn.
Philadelphia—Germantown, extinct? (Me.). *Bucks*—Rock Hill (Fr.),
Upper Black Eddy, Ringing Rocks (Ws.). *Montgomery*—Schwenksville
(Kr.). *Delaware*—Thatcher's Swamp (Fu.), barrens of Middletown (B.
Sm.), Concord (W. Tr.), Williamson (Wn.). *Chester*—W. Bradford
Twp. (St.). *Lancaster*—York Furnace (Ke.). *Berks*—(P.). *North-*
ampton—(P.).
New Jersey—Common in pine-barrens.
New Castle—Scarce.
3. *LACINARIA GRAMINIFOLIA PILOSA* (Ait.) Britton. M. p. 927. Sandy soil.
Autumn.
New Jersey—Frequent in pine-barrens.
New Castle—East of St. George's, *Canby* and *Tatnall*.

8. *GRINDELIA* Willd.

1. *GRINDELIA SQUARROSA* (Pursh.) Dunal. *Gum-plant*. M. p. 928. Intro-
duced from the West. Summer.
Philadelphia—Girard Point (Cr.).
Gloucester—Harrisonville (Li.).

9. *HETEROTHECA* Cass.

1. *HETEROTHECA SUBAXILLARIS* (Lam.) Britt. & Rusby. M. p. 929. Ballast.
Summer.
Philadelphia—Philadelphia Navy Yard, *Dr. Geo. Smith* (Fu.).

10. *CHRYSOPSIS* Nutt. GOLDEN ASTER.

Leaves elongated-linear, parallel-veined; achenes linear; involucre campan-
ulate. 1. *C. falcata*.
Leaves oblong, lanceolate or linear, pinnately veined; achenes obovate or
oval; involucre hemispheric. 2. *C. Mariana*.

1. *CHRYSOPSIS FALCATA* (Pursh.) Nutt. M. p. 929. Dry, sandy soil.
Autumn.
Burlington—Batsto (C.), Quaker Bridge (Fr.) (Pe.), Atsion (Le.).
Atlantic—Atlantic City, *Mart.* (B. C.), Pleasant Mills, *Dr. J. B. Brinton*
(He.). *Ocean*—Toms River (Br.).
2. *CHRYSOPSIS MARIANA* (L.) Nutt. M. p. 930. Dry soil. Autumn.

11. *SOLIDAGO* L. GOLDENROD.

- A. Tips of the involucre bracts, or some of them, spreading or recurved.*
Leaves glabrous or glabrate, 1-2.5 dm. long. 1. *S. squarrosa*.
B. Tips of the involucre bracts all erect and appressed.
Heads in axillary clusters, or also in a terminal spike-like, sometimes
branched thyrsus.

1. Heads 4-6 mm. high, chiefly in axillary clusters; achenes pubescent.
 Stem and branches terete; leaves lanceolate to oblong. 2. *S. caesia*.
 Stem and branches grooved and angled. 3. *S. flexicaulis*.
2. Heads 4-6 mm. high, chiefly in a terminal spike-like thyrsus; achenes glabrous or nearly so.
 Rays white, stem pubescent. 4. *S. bicolor*.
 Rays yellow; stem densely pubescent. 5. *S. hispida*.
 Rays yellow; stem glabrous or sparingly pubescent; leaves thick. 6. *S. erecta*.
 Heads in a terminal simple or branched thyrsus, not at all secund on its branches, or scarcely so.
 Bracts of the involucre acute or acutish. 7. *S. puberula*.
 Bracts of the involucre obtuse (or the inner acutish in No. 8).
 Upper leaves abruptly smaller than the lower, appressed. 8. *S. stricta*.
 Leaves gradually smaller upward, spreading or ascending.
 Lower leaves large, oblong or oval, acute or obtusish. 9. *S. speciosa*.
 Basal leaves narrowly spatulate. 10. *S. Purshii*.
 Heads in a terminal, usually large panicle, secund on its spreading or recurved branches.
 Plant maritime; leaves thick, fleshy, entire. 11. *S. sempervirens*.
 Plants not maritime; leaves not fleshy.
1. Leaves pinnately veined, not triple-nerved.
 Leaves all entire, thin and glabrous. 12. *S. odora*.
 Leaves, at least the lower, more or less dentate or serrate.
 Stem densely pubescent; leaves more or less so.
 Leaves rugose-veiny beneath, sharply serrate. 13. *S. rugosa*.
 Leaves not rugose, sparingly dentate or entire. 14. *S. fistulosa*.
 Stem glabrous, or puberulent, or pubescent only above.
 Leaves very scabrous on the upper surface, serrulate. 15. *S. patula*.
 Leaves smooth, or minutely roughened on the upper surface (pubescent in forms of No. 19).
 Racemes few, widely divergent, very slender. 16. *S. ulmifolia*.
 Racemes numerous, spreading, recurved, or ascending.
 Leaves all oblong or oblong-lanceolate, sessile. 17. *S. Ellkottii*.
 At least the lower leaves petioled, lanceolate or ovate-lanceolate.
 Leaves firm, ovate-lanceolate or oblong-lanceolate; heads about 4 mm. high; racemes short; rays several. 18. *S. neglecta*.
 Leaves firm, lanceolate or oval-lanceolate; heads 3-4 mm. high; racemes numerous, slender. 19. *S. juncea*.
 Leaves thin, the lower broadly ovate, short-acuminate; heads 5-7 mm. high; racemes numerous. 20. *S. arguta*.
2. Leaves triple-nerved, i. e., with a pair of lateral veins stronger than the others, these often obscure in No. 23.
 Stem glabrous; bracts of the involucre obtuse. 21. *S. serotina*.
 Stem pubescent or scabrous.
 Leaves lanceolate, sharply serrate or entire, rough above. 22. *S. Canadensis*.
 Leaves oblanceolate, spatulate, oblong or oval; the lower crenate. 23. *S. nemoralis*.
 Heads in a terminal, corymbiform, sometimes thyrsoid cyme, forming a flat-topped inflorescence. 24. *S. rigida*.

1. **SOLIDAGO SQUARROSA** Muhl. M. p. 935. Rocky soil. Autumn.
Philadelphia—Wissahickon, Mart. (B. C.). *Bucks*—Nockamixon, near Point Pleasant (Fr.). *Montgomery*—Shannonville (Cr.), Sumneytown (VP.). *Delaware*—Roekdale, Concord (Fu.), Wawa (He.). *Chester*—Valley Forge (Re.), Phoenixville (Sa.), W. Bradford Twp. (St.). *Lancaster*—York Furnace (Ke.). *Lehigh*—Laurel Hill, near Whitehall (Kr.). *Northampton*—Easton, Porter (B. C.). *Dauphin*—Near Harrisburg (Wn.).
Gloucester—Westville (Le.). *Hunterdon*—Milford, Prawlsville, Lambertville (C.).
New Castle—Speakmans, Mount Cuba, Commons.
2. **SOLIDAGO CAESIA** L. M. p. 935. Rich woodlands. Autumn.
- 2a. **SOLIDAGO CAESIA AXILLARIS** (Pursh.) A. Gray. M. p. 936. Rich woodlands. Autumn.
Bucks—Sellersville (Fr.).
New Castle—With type, common.
3. **SOLIDAGO FLEXICAULIS** L. M. p. 936. Moist, shaded banks. Summer.
Philadelphia—Wissahickon, Woodlands Cemetery (Gi.), Shawmont (Sa.), Fairmount Park (Wn.). *Bucks*—Sellersville, Bedminster (Fr.), Narrowsville (Mac.). *Montgomery*—Shannonville (Cr.). *Delaware*—Wawa (Ke.), Lansdowne (Pe.), Swarthmore (Pr.), Valley of Darby Creek (B. Sm.), Concord (W. Tr.), Wallingford (Wn.). *Chester*—(P.). *Lancaster*—(P.). *Northampton*—Easton, Porter (B. C.). *Dauphin*—Steelton (Wn.).
Mercer—Princeton (C.). *Hunterdon*—Brookville, Rosemont (C.).
New Castle—Frequent.
4. **SOLIDAGO BICOLOR** L. M. p. 936. Dry copses. Summer.
5. **SOLIDAGO HISPIDA** Muhl. M. p. 936. Dry copses. Autumn.
Bucks—Buckingham (Ke.). *Delaware*—Swarthmore (Pr.), Concord (W. Tr.). *Lancaster*—(P.). *Northampton*—Easton, Mart. (B. C.).
Camden—Berlin (Te.). *Gloucester*—Swedesboro (Li.). *Atlantic*—Hammonton, May's Landing (C.), Absecon (Ja.) (U. C. S.), Egg Harbor (Re.). *Ocean*—Toms River (C.). *Hunterdon*—Rosemont (C.).
6. **SOLIDAGO ERECTA** Pursh. M. p. 936. Dry soil. Autumn.
Burlington—Bear Swamp (St.). *Camden*—Clementon (VP.).
7. **SOLIDAGO PUBERULA** Nutt. M. p. 936. Sandy soil. Autumn.
Montgomery—Near Bryn Mawr (Le.). *Chester*—Valley Forge (Cr.), W. Bradford Twp. (St.), Strafford (VP.). *Lancaster*—(P.).
Burlington—Brown Mills Junction (Sa.), Taunton (Sts.), Atsion, Pemberton (Te.). *Camden*—Clementon (VP.). *Gloucester*—Mantua, near Mickleton (He.). *Cape May*—Anglesea (Li.). *Atlantic*—Egg Harbor, New Germany (Fr.), Hammonton (Pr.), Absecon (U. C. S.), Elwood (Te.). *Ocean*—Toms River.
8. **SOLIDAGO STRICTA** Ait. M. p. 937. Damp pine-barrens. Autumn.
Burlington—Atsion, Quaker Bridge (C.), Woodmansie (Sa.). *Camden*—Winslow (C.). *Cape May*—Anglesea (U. C. S.). *Atlantic*—Egg Harbor, Hammonton (Cr.) (Ke.). *Ocean*—Forked River (Mac.), West Creek (St.).

9. *SOLIDAGO SPECIOSA* Nutt. M. p. 937. Rich soil. Autumn.
Philadelphia—Manayunk, *Mart.* (B. C.). *Bucks*—Nockamixon (Ja.).
Montgomery—Ivy Rock, Sumneytown (VP.). *Delaware*—Tinicum (P.).
Chester—Phoenixville, *Mart.* (B. C.), north of Coatesville (St.). *Lancaster*—(P.). *Northampton*—(P.).
Camden—Cedar Brook (Cr.), near Gloucester (Sa.). *Gloucester*—Near
Mickleton (He.). *Hunterdon*—Stockton (C.).
New Castle—Vandyke, Commons and Tatnall.
10. *SOLIDAGO PURSHII* Porter. M. p. 937. Rocky banks. Summer.
Lancaster—McCall's Ferry, *Porter* (B. C.).
11. *SOLIDAGO SEMPERVIRENS* L. M. p. 938. Sandy soil near the shore.
Autumn.
Bucks—Penn Valley (Cr.). *Delaware*—Tinicum, *Dr. Geo. Smith* (B. Sm.).
New Jersey—Common.
New Castle—Delaware River near the Lighthouse. Scarce.
12. *SOLIDAGO ODORA* Ait. *Sweet Goldenrod*. M. p. 938. Dry soil. Summer.
13. *SOLIDAGO RUGOSA* Mill. M. p. 938. Borders of fields and copses. Summer and fall.
14. *SOLIDAGO FISTULOSA* Mill. M. p. 938. Low grounds in pine-barrens.
Autumn.
Burlington—Atsion, Woodmansie (Sa.). *Camden*—Haddonfield (Cr.).
Gloucester—Malaga, Clarksboro (C.), Mickleton (He.), Swedesboro (Li.).
Cape May—Anglesea (He.). *Atlantic*—Egg Harbor, Hammonton (Fr.).
Ocean—Toms River, Bay Head (C.), Forked River (Ja.).
15. *SOLIDAGO PATULA* Muhl. M. p. 939. Swamps. Autumn.
Bucks—Springfield, *Moyer* (P.). *Delaware*—Springfield, *Thomas Powell's*, *Dr. Geo. Smith* (Fu.), Swarthmore (Pr.), Tinicum (St.), Concord (W. Tr.).
Chester—Westtown (Le.), W. Bradford Twp. (St.). *Lancaster*—(P.). *Northampton*—(P.).
Gloucester—Near Mickleton (He.). *Salem*—Woodstown (Wa.). *Monmouth*—Freehold (C.).
New Castle—Christiana, Tatnall; Centerville, Commons.
16. *SOLIDAGO ULMIFOLIA* Muhl. M. p. 939. Woods and copses. Summer.
17. *SOLIDAGO ELLIOTTII* T. & G. M. p. 939. Swamps. Autumn.
Lancaster—New Texas, very rare (Ca.).
Burlington—Brown Mills (Sts.). *Mercer*—Trenton (C.).
18. *SOLIDAGO NEGLECTA* T. & G. M. p. 939. Swamps. Autumn.
Bucks—Near Bristol (Fr.). *Delaware*—Haverford College (Le.), Swarthmore (B. Sm.), Tinicum (St.).
Burlington—Quaker Bridge (Pe.), Brown Mills (Sts.). *Camden*—Lindenwold (VP.).
Gloucester—Mickleton (He.), Swedesboro (Li.). *Ocean*—Tuckerton (W. Tr.).
Middlesex—South River, South Amboy (C.).
New Castle—General and frequent.
19. *SOLIDAGO JUNCEA* Ait. M. p. 939. Dry or rocky soil. Summer and fall.
Philadelphia—Shawmont (VP.). *Bucks*—Argus (Fr.), Nockamixon (Ja.).
Chester—W. Bradford Twp. (St.). *Lancaster*—McCall's Ferry

(Ca.), Fites' Eddy (Le.), Paradise (St.). *Northampton*—Easton, Porter (B. C.).

New Jersey—General.

New Castle—Above Rockland. Frequent.

20. *SOLIDAGO ARGUTA* Ait. M. p. 939. Copses and moist woods. Summer and fall.

Philadelphia—Byberry, Mart. (B. C.), Shawmont (Sa.). *Bucks*—Hoot's Mill (Fr.), Rushland by Neshaminy (Ws.). *Montgomery*—Wyndmoor (Re.). *Delaware*—Concord (W. Tr.). *Chester*—Valley Forge, W. Bradford (St.). *Lancaster*—(P.). *Northampton*—Easton (P.).

Gloucester—Mullica Hill (C.). *Hunterdon*—Sergeantsville (C.).

New Castle—Thompson's. Frequent.

21. *SOLIDAGO SEROTINA* Ait. M. p. 940. Moist soil. Autumn.

- 21a. *SOLIDAGO SEROTINA GIGANTEA* (Ait.) A. Gray. M. p. 940. Moist soil. Autumn.

22. *SOLIDAGO CANADENSIS* L. M. p. 940. Borders of thickets and fields. Autumn.

23. *SOLIDAGO NEMORALIS* Ait. M. p. 940. Dry, sterile fields. Summer and autumn.

24. *SOLIDAGO RIGIDA* L. M. p. 941. Dry soil. Autumn.

Bucks—Perkasie (Fr.). *Montgomery*—Green Lane (VP.). *Chester*—(P.). *Lancaster*—Pleasant Grove (Ca.) (Pr.). *Northampton*—Easton, Porter (Fu.).

Atlantic—Egg Harbor (Wn.). *Hunterdon*—Lambertville (C.).

12. EUTHAMIA Nutt.

Leaves distinctly 3-5-nerved; ray-flowers 12-20.

1. *E. graminifolia*.

Leaves 1-nerved, or with a pair of indistinct lateral nerves; ray-flowers 5-10.

2. *E. Caroliniana*.

1. *EUTHAMIA GRAMINIFOLIA* (L.) Nutt. M. p. 942. Moist soil. Summer and fall.

2. *EUTHAMIA CAROLINIANA* (L.) Greene. M. p. 942. Sandy fields. Autumn. *Bucks*—Bristol (P.), Tullytown (Fr.). *Montgomery*—(P.). *Delaware*—Fernwood, Dr. Geo. Smith (B. Sm.). *Lehigh*—Salisbury (Kr.).

New Jersey—Common.

New Castle—Collins' Beach, Commons.

13. BELLIS L.

1. *BELLIS PERENNIS* L. *European Daisy*. M. p. 943. Cultivated and spreading from beds. Spring to fall.

14. BOLTONIA L'Her.

1. *BOLTONIA ASTEROIDES* (L.) L'Her. M. p. 945. Moist soil. Summer and fall.

Lancaster—Peach Bottom, York Furnace, Columbia (Pe.) (Wn.). *Dauphin*—Harrisburg (Me.), Steelton (Wn.).

15. SERICOCARPUS Nees. WHITE-TOPPED ASTER.

Leaves entire, linear, spatulate or obovate, rigid.

1. *S. linifolius*.

Leaves dentate, oblong or obovate, thin.

2. *S. asteroides*.

1. **SERICOCARPUS LINIFOLIUS** (L.) B. S. P. M. p. 946. Dry, usually sandy soil. Summer and fall.

Philadelphia—Germantown (Me.). *Bucks*—Bristol, Doylestown, A. S. Martin (Fr.). *Montgomery*—Willow Grove (VP.). *Delaware*—Upper Darby, below Llanerch (B. Sm.), Concord (W. Tr.). *Chester*—North of Coatesville (St.). *Lancaster*—Pleasant Grove (Ca.).

New Jersey—Frequent.

New Castle—Frequent.

2. **SERICOCARPUS ASTEROIDES** (L.) B. S. P. M. p. 946. Dry ground. Summer and fall.

16. ASTER L.

- A. Basal and lower leaves, or some of them, cordate and slender-petioled.

1. None of the stem-leaves cordate-clasping.

*Rays white, violet or rose.

†Rays white or rarely rose, usually two-toothed; plants not glandular.

Involucre ovoid, campanulate or turbinate, its bracts mostly obtuse or rounded; basal leaves few and small, or commonly none.

Leaves membranous or thin, smooth or nearly so.

Heads 18-25 mm. broad; leaves of the branches small, obtuse or acute.

1. *A. divaricatus*.

Heads 25 mm. broad or more; leaves of the branches large, long, lanceolate, acuminate.

2. *A. tenebrosus*.

Leaves thick, firm, rough, at least when dry.

3. *A. Claytoni*.

Involucre cylindric, its bracts tapering to an obtuse apex; basal leaves large, tufted.

4. *A. Schreberi*.

††Rays violet, usually 3-toothed; plants glandular.

5. *A. macrophyllus*.

**Rays blue or purple; plants not glandular.

Heads 4-6 mm. high, numerous; bracts obtuse or obtusish.

Leaves rough; petioles not wing-margined; bracts appressed.

6. *A. cordifolius*.

Leaves smooth or nearly so; petioles, or some of them, wing-margined.

7. *A. Lowrieianus*.

Heads 6-10 mm. high, numerous; bracts acute or acuminate.

8. *A. sagittifolius*.

2. Stem-leaves, or some of them, cordate-clasping; plant rough when dry.

9. *A. undulatus*.

B. No cordate and petioled leaves; those of the stem, or some of them, with more or less auricled clasping base.

1. Stem rough or hirsute-pubescent.

*Leaves entire, oblong, linear or lanceolate.

Heads 2.5-5 cm. broad; leaves sessile, strongly cordate-clasping.

Stem rough, leaves oblong to lanceolate; involucre hemispheric.

Leaves thick, firm, very rough, oblong to oval.

10. *A. patens*.

Leaves thin, roughish, oblong-lanceolate.

11. *A. phlogifolius*.

Stem hirsute; leaves lanceolate; involucre hemispheric.

12. *A. Novae-Angliae*.

Heads 1-2.5 cm. broad; leaves but slightly clasping.

13. *A. amethystinus*.

**Leaves, at least the lower, serrate.

14. *A. puniceus*.

2. Stem glabrous, or only sparingly pubescent above.

*Leaves sharply serrate.

Leaves tapering to the base.

Leaves lanceolate to oblong-lanceolate, sessile.

14. *A. puniceus*.

- Leaves oval to ovate, the lower often petioled. 15. *A. patulus*.
 Leaves abruptly contracted into margined petioles, often enlarged near the base. 16. *A. prenanthoides*.
 Leaves strongly cordate-clasping; bracts green-tipped. 17. *A. laevis*.
- **Leaves entire or very nearly so.**
 Involucre campanulate, its bracts appressed, green-tipped.
 Stem-leaves oblong, lanceolate or oval-lanceolate. 17. *A. laevis*.
 Stem leaves elongated-lanceolate to linear. 18. *A. concinnus*.
 Involucre hemispheric.
 Bracts in several series, unequal. 19. *A. Novi-Belgii*.
 Bracts in only 1 or 2 series; leaves linear to lanceolate. 20. *A. longifolius*.
- C. Leaves sessile or petioled, not at all clasping or scarcely so.**
 Leaves silky, silvery or canescent on both sides, entire. 21. *A. concolor*.
 Leaves neither silky, silvery nor canescent, often toothed.
 Rays normally purple, blue, pink or violet; not white.
 Tips of the involucre bracts strongly squarrose.
 Involucre hemispheric or nearly so; heads 2.5 cm. broad or more.
 Bracts of the involucre glandular. 22. *A. spectabilis*.
 Bracts of the involucre ciliate or glabrous. 23. *A. surculosus*.
 Involucre turbinate; heads 12-18 mm. broad. 24. *A. gracilis*.
 Tips of the involucre bracts appressed or erect.
 Bracts of the involucre coriaceous or herbaceous, oblong, linear, lanceolate or spatulate. 25. *A. Radula*.
 Bracts of the involucre linear-subulate, membranous, acute. 26. *A. nemoralis*.
 Rays mostly white or nearly so (often pink or purple in Nos. 27, 28, 29 and 35).
 Heads solitary at the ends of slender branches. 27. *A. dumosus*.
 Heads paniculate or racemose, 8-20 mm. broad.
 Bracts of the involucre acute or obtusish; plants glabrous or pubescent.
 Heads paniculate, not in 1-sided racemes.
 Stem-leaves lanceolate, serrate or entire.
 Heads 16-20 mm. broad.
 Leaves firm, roughish or rough; rays often bluish. 28. *A. salicifolius*.
 Leaves thin; smoothish; rays chiefly white. 29. *A. paniculatus*.
 Heads 12-16 mm. broad; stem-leaves narrowly lanceolate. 30. *A. Tradescanti*.
 Stem-leaves linear-lanceolate to subulate, mostly entire.
 Paniculately branched, bushy. 31. *A. ericoides*.
 Simple, or with ascending slender branches. 32. *A. Pringlei*.
 Heads racemose and 1-sided on the branches.
 Stem-leaves oval, oblong, or lanceolate, serrate, or chiefly so. 33. *A. lateriflorus*.
 Stem-leaves linear-lanceolate to linear, nearly entire; stem glabrate. 34. *A. vimineus*.
 Bracts of the involucre, at least the outer, obtuse; plants very rough. 35. *A. multiflorus*.
- D. Leaves fleshy, narrow, entire; plants of salt marshes or saline soil.**

Perennial; heads 15-25 mm. broad; involucre bracts lanceolate, acuminate. 36. *A. tenuifolius*.

Annuals; heads 6-10 mm. broad; involucre bracts linear-subulate.

37. *A. subulatus*.

1. *ASTER DIVARICATUS* L. M. p. 949. Woodlands. Autumn.
- 1a. *ASTER DIVARICATUS CYMULOSUS* Burgess. M. p. 949. Woodlands. Autumn.
Northampton—(P.).
2. *ASTER TENEBROSUS* Burgess. M. p. 950. Moist, dark woodlands. Autumn.
Lancaster—(P.).
3. *ASTER CLAYTONI* Burgess. M. p. 950. Sunny or slightly shady, rocky places. Autumn.
Bucks—Argus (Fr.). *Northampton*—(P.).
4. *ASTER SCHREBERI* Nees. M. p. 951. Borders of woods and along shaded fence-rows. Late summer.
Bucks—Rock Hill (Fr.). *Northampton*—(P.).
5. *ASTER MACROPHYLLUS* L. M. p. 951. Shaded places. Late summer.
Philadelphia—Fairmount Park (Ja.), Wister (Re.), Wissahickon (VP.). *Bucks*—Rock Hill (Fr.). *Montgomery*—Willow Grove, Dr. J. B. Brinton (B. C.), Shannonville (Cr.). *Delaware*—Near Media (Fu.), Swarthmore (Ws.). *Chester*—Westtown (W. Tr.). *Lancaster*—(P.).
Northampton—Easton, Porter (B. C.).
Camden—Timber Creek (C.). *Gloucester*—Swedesboro (Li.). *Monmouth*—Colt Neck (C.). *Hunterdon*—Prallsville, Stockton (C.).
New Castle—Common.
6. *ASTER CORDIFOLIUS* L. M. p. 953. Woodlands. Autumn.
- 6a. *ASTER CORDIFOLIUS POLYCEPHALUS* Porter. M. p. 953. Woodlands. Autumn.
Bucks—(P.). *Northampton*—Easton, Porter (B. C.).
7. *ASTER LOWRIEANUS* Porter. M. p. 953. Woods. Autumn.
Bucks—Argus (Fr.). *Montgomery*—(P.). *Chester*—Coatesville, H. E. Stone (B. C.). *Northampton*—Easton, Porter (B. C.).
- 7a. *ASTER LOWRIEANUS LANCIFOLIUS* Porter. M. p. 954. Woods. Autumn.
Bucks—(P.). *Montgomery*—(P.). *Northampton*—(P.).
- 7b. *ASTER LOWRIEANUS BICKNELLII* Porter. M. p. 954. Woods. Autumn.
Bucks—Argus, Rock Hill (Fr.). *Northampton*—(P.).
8. *ASTER SAGITTIFOLIUS* Willd. M. p. 954. Dry ground. Autumn.
Bucks—Rock Hill (Fr.). *Delaware*—Near Haverford (Le.), Ridley Creek above Media, Dr. Geo. Smith (B. Sm.). *Chester*—Greentree (Te.).
Lehigh—(P.). *Northampton*—(P.).
Mercer—Princeton (C.). *Hunterdon*—Locktown, Sergeantsville (C.).
New Castle—General and common.
9. *ASTER UNDULATUS* L. M. p. 955. Dry copses. Autumn.
- 9a. *ASTER UNDULATUS LORIFORMIS* Burgess. M. p. 955. Dry copses. Autumn.
Lancaster—(P.). *Dauphin*—(P.).
10. *ASTER PATENS* Ait. M. p. 955. Dry, open places. Autumn.

11. *ASTER PHLOGIFOLIUS* Muhl. M. p. 955. Woods and thickets. Autumn.
Bucks—Rock Hill (Fr.). *Montgomery*—Shannonville (Cr.), Edge Hill (Re.), Green Lane (VP.). *Delaware*—Upper Providence, Dr. Geo. Smith (Fu.), Lansdowne (Pe.), Swarthmore (Pr.). *Lancaster*—(P.). *Northampton*—(P.).
Camden—Atco (C.). *Hunterdon*—Rosemont (C.).
New Castle—Frequent.
12. *ASTER NOVAE-ANGLIAE* L. M. p. 955. Moist ground. Autumn.
Philadelphia—Germantown (Me.). *Bucks*—Along the Delaware, Moyer (P.). *Montgomery*—Shannonville (Cr.), Spring Mill (Je.) (Ke.), Edge Hill (Re.), Rubicam (U. C. S.), Fort Washington (VP.). *Delaware*—Upper Providence, etc.; common (Fu.), near Media (B. Sm.). *Chester*—(P.). *Lancaster*—(P.). *Northampton*—Easton, Porter (B. C.).
Burlington—Atsion, Pemberton, New Lisbon (C.). *Salem*—Mannington, Daretown (C.). *Ocean*—Toms River (C.). *Mercer*—Princeton (Te.), Trenton (Ws.).
New Castle—Escaped; Edgemoor, Hockessin, Canby; Faulkland.
13. *ASTER AMETHYSTINUS* Nutt. M. p. 956. Moist soil. Autumn.
Northampton—On Delaware (P.).
14. *ASTER PUNICEUS* L. M. p. 956. Low thickets and swamps. Summer and fall.
- 14a. *ASTER PUNICEUS FIRMUS* (Nees) T. & G. M. p. 956. With type.
Bucks—(P.).
- 14b. *ASTER PUNICEUS COMPACTUS* Fernald. M. p. 956. With type.
Delaware—Tinicum (B. Sm.).
- 14c. *ASTER PUNICEUS CRAWFORDI* Porter. M. p. 956. With type.
Bucks—Tullytown (Cr.).
15. *ASTER PATULUS* Lam. M. p. 957. Autumn.
Northampton—Bethlehem (P.).
16. *ASTER PRENANTHOIDES* Muhl. M. p. 957. Borders of streams and rich woods. Autumn.
Philadelphia—Wissahickon. *Bucks*—Rock Hill (Fr.), Solebury (Ws.). *Montgomery*—Shannonville (Cr.). *Delaware*—Haverford College (Le.). *Chester*—(P.). *Lancaster*—(P.). *Northampton*—(P.).
Hunterdon—Bull Island (C.).
New Castle—Frequent.
- 16a. *ASTER PRENANTHOIDES PORRECTIFOLIUS* Porter. M. p. 957. Borders of streams and rich woods. Autumn.
Bucks—Three-mile Run (Fr.). *Northampton*—(P.).
17. *ASTER LAEVIS* L. M. p. 957. Borders of woodlands. Autumn.
Philadelphia—Near Water-works (Mac.), Wissahickon (Re.). *Bucks*—Near Perkasio (Fr.), Argus (Ke.). *Montgomery*—Shannonville (Cr.), Edge Hill, Green Lane (VP.). *Delaware*—Middletown (Fu.) (B. Sm.), Concord (Fu.) (W. Tr.), Darby (Fu.), Elwyn (He.) (U. C. S.), near Cheyney (Le.). *Chester*—(P.). *Lancaster*—(P.). *Northampton*—Easton, Porter (B. C.).
New Castle—Rattlesnake Run, Wooddale.

- 17a. *ASTER LAEVIS AMPLIFOLIUS* Porter. M. p. 957. Dry soil. Autumn.
Bucks—Rock Hill (Fr.). *Lancaster*—(P.). *Northampton*—(P.).
18. *ASTER CONCINNUS* Willd. M. p. 957. Moist ground. Autumn.
Delaware—Swarthmore (Pr.).
Camden—Cedar Brook (Cr.).
New Castle—Thompson's Swamp, Canby.
19. *ASTER NOVI-BELGHII* L. M. p. 958. Swamps. Autumn.
- 19a. *ASTER NOVI-BELGHII LITOREUS* A. Gray. M. p. 958. Swamps. Autumn.
Delaware—Tinicum (P.).
- 19b. *ASTER NOVI-BELGHII ELODES* (T. & G.) A. Gray. M. p. 958. Swamps. Autumn.
Montgomery—West Willow Grove (Sa.).
Camden—Cedar Brook (Mac.). *Gloucester*—Swedesboro (Li.).
20. *ASTER LONGIFOLIUS* Lam. M. p. 958. Low grounds. Summer.
Philadelphia—Upper Wissahickon (Je.). *Montgomery*—Spring Mill (Ke.). *Delaware*—Tinicum, *Dr. Geo. Smith* (Fu.), Elwyn (U. C. S.).
Lancaster—New Texas, very rare (Ca.).
Gloucester—Near Swedesboro (Li.). *Atlantic*—Egg Harbor (Pr.), Elwood (Te.).
21. *ASTER CONCOLOR* L. M. p. 959. Dry, sandy soil near the coast. Autumn.
New Jersey—Pine-barrens, frequent.
22. *ASTER SPECTABILIS* Ait. M. p. 959. Sandy soil, mostly near the coast. Autumn.
New Jersey—Pine-barrens, frequent.
23. *ASTER SURCULOSUS* Michx. M. p. 959. Sandy or gravelly soil. Autumn.
Camden—Cedar Brook (Mac.), Ancora (Te.). *Gloucester*—Swedesboro (Li.). *Atlantic*—Hammononton (Cr.), Egg Harbor (He.) (Wn.), Absecon (Wn.). *Ocean*—Toms River, *Dr. Geo. Smith* (Fu.), Tuckerton (W. Tr.).
Monmouth—Asbury Park (Wn.). *Middlesex*—South River (C.).
24. *ASTER GRACILIS* Nutt. M. p. 959. Pine-barrens. Late summer.
Burlington—Shamong (C.). *Camden*—Winslow Junction, Mart. (B. C.). *Atlantic*—Egg Harbor, Pleasant Mills, Hammononton (C.), Ventnor (Gi.). *Ocean*—Forked River (Ja.).
25. *ASTER RADULA* Ait. M. p. 960. Swamps. Late summer.
Bucks—Yardleyville (W. Tr.). *Delaware*—Tinicum, *Dr. Geo. Smith* (Fu.) (B. Sm.). *Chester*—(P.). *Lancaster*—(P.). *Northampton*—(P.).
Camden—Merchantville (Sts.). *Gloucester*—Near Mickleton (He.), Swedesboro (Li.). *Atlantic*—Egg Harbor (U. C. S.). *Mercer*—Assinpink Creek (VP.).
New Castle—Thompson's, Pencader Head near N. C. Road. Rare elsewhere.
26. *ASTER NEMORALIS* Ait. M. p. 961. Sandy bogs. Autumn.
Burlington—Atsion (Fr.), Brown Mills (Te.). *Camden*—Cedar Brook (Ja.). *Gloucester*—Swedesboro (Li.). *Atlantic*—Egg Harbor, Hammononton (Ke.) (Pr.). *Ocean*—Tuckerton, *Dr. Geo. Smith* (Fu.), Forked River (Ja.).
27. *ASTER DUMOSUS* L. M. p. 961. Sandy soil. Autumn.

28. *ASTER SALICIFOLIUS* Lam. M. p. 962. Low grounds. Autumn.
Philadelphia—Wissahickon (Ha.), West Philadelphia (Mac.). *Bucks*—
 Sellersville (Fr.). *Montgomery*—Flat Rock Tunnel (Te.). *Delaware*—
 Elwyn (U. C. S.), Chad's Ford (Te.). *Lancaster*—(P.). *Northampton*
 —(P.). *Dauphin*—(P.).
New Castle—Thompson's, Ogletown.
- 28a. *ASTER SALICIFOLIUS SUBASPER* (Lindl.) A. Gray. M. p. 962. Low
 grounds. Autumn.
Northampton—(P.).
29. *ASTER PANICULATUS* Lam. M. p. 962. Shaded, moist banks. Autumn.
Philadelphia—Woodlands Cemetery (Gi.), Bartram's Garden (He.),
 Wissahickon (Je.), Gibson's Point (Mac.). *Bucks*—Buckingham (Ja.),
 Tullytown (U. C. S.). *Montgomery*—Shannonville (Cr.). *Delaware*—
 Upper Darby, Dr. Geo. Smith (Fu.), Lansdowne (Pe.), near Media (B.
 Sm.). *Lancaster*—(P.). *Northampton*—Easton, Porter (B. C.). *Dau-*
phin—(P.).
Gloucester—Mickleton, common (He.), Washington Park (Ja.), Swedes-
 boro (Li.). *Atlantic*—May's Landing (C.).
New Castle—General and common.
- 29a. *ASTER PANICULATUS BELLIDIFLORUS* (Willd.) Burgess.
Delaware—(P.).
- 29b. *ASTER PANICULATUS ACUTIDENS* Burgess.
Delaware—Ridley (B. Sm.).
30. *ASTER TRADESCANTI* L. M. p. 962. Low grounds. Autumn.
31. *ASTER ERICOIDES* L. M. p. 963. Dry, open places. Autumn.
- 31a. *ASTER ERICOIDES PILOSUS* (Willd.) Porter. M. p. 963. Dry, open
 places. Autumn.
Lancaster—(P.).
- 31b. *ASTER ERICOIDES DEPAUPERATUS* Porter. M. p. 963. Dry, open places.
 Autumn.
Chester—(P.). *Lancaster*—New Texas (P.).
32. *ASTER PRINGLEI* (A. Gray) Britton. M. p. 963. Banks, especially in
 rocky places. Autumn.
Lancaster—Along Susquehanna (P.). *Dauphin*—Harrisburg (P.).
33. *ASTER LATERIFLORUS* (L.) Britton. M. p. 963. Thickets, fields, etc.
 Autumn.
- 33a. *ASTER LATERIFLORUS GLOMERELLUS* (T. & G.) Burgess. M. p. 964.
 Thickets, fields, etc. Autumn.
Lancaster—(P.). *Northampton*—(P.). *Dauphin*—(P.).
- 33b. *ASTER LATERIFLORUS THYRSOIDEUS* (A. Gray) Sheldon. M. p. 964.
 Thickets, fields, etc. Autumn.
Bucks—(P.). *Northampton*—(P.).
Camden—Delair (Ja.). *Cape May*—Sea Isle (He.).
- 33c. *ASTER LATERIFLORUS GRANDIS* Porter. M. p. 964. Fields, thickets, etc.
 Autumn.
Northampton—(P.).

- 33d. *ASTER LATERIFLORUS PENDULUS* (Ait.) Burgess. M. p. 964. Fields, thickets, etc. Autumn.
Lancaster—(P.).
- 33e. *ASTER LATERIFLORUS HORIZONTALIS* (Desf.) Burgess. M. p. 964. Fields, thickets, etc. Autumn.
Northampton—(P.).
34. *ASTER VIMINEUS* Lam. M. p. 964. Moist banks. Autumn.
Philadelphia—West Philadelphia (Mac.), Pennypack (Re.). *Bucks*—Rock Hill, Point Pleasant (Fr.), Tullytown (U. C. S.). *Delaware*—Williamson (Ja.), Wawa (Ke.), Swarthmore (Pr.). *Lancaster*—(P.). *Northampton*—(P.).
Camden—Delair (Ja.), Clementon (VP.). *Gloucester*—Swedesboro (Li.). *Salem*—Riddleton (Li.) (Wa.). *Hunterdon*—Rosemont (C.).
- 34a. *ASTER VIMINEUS COLUMBIANUS* Britton. M. p. 964. Moist banks. Autumn.
Philadelphia—(P.). *Northampton*—(P.).
35. *ASTER MULTIFLORUS* Ait. M. p. 964. Dry, sandy soil. Autumn.
Philadelphia—West Philadelphia (Mac.). *Bucks*—Upper Black Eddy (Ws.). *Montgomery*—Shannonville (Cr.). *Delaware*—Williamson (Ja.). *Lancaster*—McCall's Ferry (Ca.). *Northampton*—Easton, Porter (B. C.). *Camden*—Merchantville (Te.). *Cape May*—Cape May (Ja.). *Monmouth*—Monmouth Beach (C.).
New Castle—Col. Andrews'.
36. *ASTER TENUIFOLIUS* L. M. p. 965. Salt marshes. Autumn.
New Jersey—Common along the coast.
New Castle—Thompson's. Scarce.
37. *ASTER SUBULATUS* Michx. M. p. 965. Salt marshes on the coast. Autumn.
Philadelphia—(P.).
New Jersey—General.
New Castle—Collins' Beach, Commons; railroad wharf, Canby; south side near Market Street.

17. *ERIGERON* L. FLEABANE.

- Heads 25-37 mm. broad, few; stem simple. 1. *E. pulchellus*.
Heads 12-25 mm. broad, numerous; stem branched. 2. *E. Philadelphicus*.
Rays 100-150, narrow, mostly purple or violet. 3. *E. annuus*.
Rays much less numerous, purplish or white. 4. *E. racemosus*.
Stem-leaves lanceolate, nearly all sharply serrate.
Stem-leaves linear-lanceolate or oblong, nearly all entire.
1. *ERIGERON PULCHELLUS* Michx. *Robin's Plantain*. M. p. 968. Copses and moist banks. Spring.
2. *ERIGERON PHILADELPHICUS* L. M. p. 968. Fields and woods. Spring.
Philadelphia—Woodlands Cemetery (Gi.), Shay's Lane, Roxboro (Je.), Fairmount Park (Te.). *Bucks*—Tullytown (Cr.) (Ja.), Argus (Fr.), Nockamixon (He.), Point Pleasant by river shore (Ws.). *Delaware*—Haverford College (Le.), Lansdowne (Pe.), near Swarthmore (Pr.), Val-

ley of Darby Creek (B. Sm.), Concord (W. Tr.). *Chester*—Falls of French Creek (Ja.), Devon (U. C. S.). *Lancaster*—York Furnace, Dr. J. B. Brinton (B. C.). *Northampton*—Easton, Porter (B. C.). *Dauphin*—Steelton (Wn.).

Hunterdon—Pittstown, Rosemont (C.). *Mercer*—Trenton.

New Castle—Eastburn's, Harvey's. Scarce.

3. *ERIGERON ANNUUS* (L.) Pers. *Daisy Fleabane*. M. p. 969. Fields and waste places. Spring to fall.
4. *ERIGERON RAMOSUS* (Walt.) B. S. P. *Daisy Fleabane*. M. p. 969. Fields. Spring to fall.

18. *LEPTILON* Raf.

1. *LEPTILON CANADENSE* (L.) Britton. *Horse-weed*. M. p. 970. Cultivated ground and waste places. Spring to fall.

19. *DOELLINGERIA* Nees.

Leaves lanceolate to ovate; heads mostly numerous.

Leaves lanceolate to oblong-lanceolate, acuminate.

Leaves ovate to ovate-lanceolate, acute.

Leaves, at least the lower, obovate; heads commonly few.

1. *D. umbellata*.

2. *D. humilis*.

3. *D. infirma*.

1. *DOELLINGERIA UMBELLATA* (Mill.) Nees. M. p. 970. Moist thickets. Summer and fall.

2. *DOELLINGERIA HUMILIS* (Willd.) Britton. M. p. 970. Moist soil. Late summer.

Delaware—Darby (Fu.). *Lancaster*—(P.).

Atlantic—May's Landing (C.), Egg Harbor (Mac.).

3. *DOELLINGERIA INFIRMA* (Michx.) Greene. M. p. 970. Open woodlands. Autumn.

Philadelphia—West Fairmount Park (Mac.). *Bucks*—Rock Hill (Fr.).

Delaware—Darby, Dr. Geo. Smith (Fu.), Wawa, Dr. J. B. Brinton (He.),

Swarthmore (Pr.), Concord (W. Tr.). *Chester*—(P.). *Lancaster*—(P.).

Northampton—(P.).

Gloucester—Near Mickleton (He.), Swedesboro (Li.). *Mercer*—Trenton (C.). *Hunterdon*—Rosemont (C.).

New Castle—Hand's, Allapokas Hills. Rather scarce.

20. *IONACTIS* Greene.

1. *IONACTIS LINARIIFOLIUS* (L.) Greene. M. p. 971. Dry soil. Summer and fall.

21. *BACCHARIS* L.

1. *BACCHARIS HALIMIFOLIA* L. *Groundsel-tree*. M. p. 971. Salt marshes and along tidal rivers. Autumn.

Delaware—Crum Creek, C. E. Smith (B. C.), mouth of Ridley Creek

(Fu.), Marple, Dr. Geo. Smith (Fu.) (W. Tr.), Haverford near West

Chester Pike, Darby Creek (B. Sm.), Williamson, one plant (Wn.). *Lan-*

caster—Once found at Pleasant Grove (Ca.).

New Jersey—Common.

New Castle—Giant's Cave, Tatnall; Iron Hill, Cherry Island, Commons and Tatnall; common at Collins'.

22. GIFOLA Cass.

1. GIFOLA GERMANICA (L.) Dumort. *Herba-impia*. M. p. 972. Dry fields. Summer.

Philadelphia—(P.). *Bucks*—Bedminster Cemetery (Fr.). *Delaware*—Haverford, Dr. Geo. Smith (Fu.). *Chester*—(P.). *Lancaster*—(P.).
Camden—Ballast (C.). *Monmouth*—Shrewsbury (C.).
New Castle—John Talley's.

23. PLUCHEA Cass. MARSH FLEABANE.

Perennial; leaves sessile, cordate, or clasping at the base. 1. *P. foetida*.
 Annual; leaves, at least those of the stem, petioled. 2. *P. camphorata*.

1. PLUCHEA FOETIDA (L.) B. S. P. M. p. 973. Swamps. Summer.
Cape May—Cape May (Ja.).
2. PLUCHEA CAMPHORATA (L.) DC. M. p. 973. Salt marshes. Autumn.
Philadelphia—Mifflin Street Wharf (Ja.). *Bucks*—Bristol (P.).
New Jersey—Common.
New Castle—Collins' Beach. Rare.

24. ANTENNARIA Gaertn. CAT'S-FOOT. EVERLASTING.

Basal leaves small, 0.7-2 cm. long, 1-nerved or indistinctly 3-nerved.
 Basal leaves spatulate, usually abruptly mucronulate.

1. *A. neodioica*.
 Basal leaves obovate to oblanceolate, acute or obtuse.
 2. *A. neglecta*.

Basal leaves large, 2-12 cm. long, distinctly 3-nerved, sometimes 5-nerved, the lateral nerves also often prominent.

Plants not glandular; leaves dull and woolly on the upper surface, at least when young.

Involucre of the fertile plants 6-8 mm. high. 3. *A. plantaginifolia*.
 Involucre 8-10.5 mm. high. 4. *A. fallax*.

Plants glandular, at least above. 5. *A. Parlinii*.

1. ANTENNARIA NEODIOICA Greene. M. p. 975. Dry, shaded places. Spring and early summer.
2. ANTENNARIA NEGLECTA Greene. M. p. 975. Fields and pastures. Spring.
3. ANTENNARIA PLANTAGINIFOLIA (L.) Richards. M. p. 975. Sterile soil, especially in open woods. Spring.
4. ANTENNARIA FALLAX Greene. M. p. 976. Dry soil. Spring.
Mercer—Trenton.
5. ANTENNARIA PARLINII Fernald. M. p. 976. Dry soil. Spring.
Bucks—Tullytown (P.).

25. ANAPHALIS DC.

1. ANAPHALIS MARGARITACEA (L.) Benth. & Hook. *Pearly Everlasting*.
 M. p. 977. Dry soil. Summer.

26. GNAPHALIUM L. EVERLASTING. CUDWEED.

Tall, erect; inflorescence corymbose or paniculate; pappus-bristles distinct.

1. *G. obtusifolium*.

Low, diffuse; inflorescence mostly capitate; pappus-bristles distinct.

2. *G. uliginosum*.

Slender, simple; heads spicate; pappus-bristles united at base, falling away in a ring.

3. *G. purpureum*.

1. *GNAPHALIUM OBTUSIFOLIUM* L. *Common Everlasting*. M. p. 977. Fields. Autumn.
 2. *GNAPHALIUM ULIGINOSUM* L. *Low Cudweed*. M. p. 978. Low grounds. Summer.
 3. *GNAPHALIUM PURPUREUM* L. M. p. 978. Sandy or gravelly soil. Summer.
- *GNAPHALIUM LUTEUM ALBUM* L. Ballast. Summer.
Camden—Kaighn's Point (Ja.) (Wn.).

27. *INULA* L.

- 1: *INULA HELENIUM* L. *Elecampane*. M. p. 979. Roadsides and damp pastures. Summer.
Philadelphia — Byberry, Mart. (B. C.), Thorpe Lane, Wissahickon (VP.). *Bucks*—Ridge Valley (Fr.). *Montgomery*—Shannonville (Cr.), above Sumneytown (VP.). *Delaware* — Near Elwyn (Fu.), Valley of Darby Creek, Dr. Geo. Smith (B. Sm.). *Chester*—(P.). *Lancaster*—(P.). *Lehigh*—Coplay (Kr.). *Northampton*—(P.).
Gloucester — Near Mickleton (He.). *Ocean* — Point Pleasant (Wn.).
Hunterdon—Clinton (Te.).
New Castle—State Road, Rockland, south of Blackbird. Scarce.

28. *POLYMNIA* L. LEAF-CUP.

- Rays commonly 12-25 mm. long, yellow; achenes strongly striate.
1. *P. Uvedalia*.
Rays commonly minute and whitish or none; achenes 3-ribbed.
2. *P. Canadensis*.
1. *POLYMNIA UVEDALIA* L. M. p. 979. Rich soil. Summer.
Montgomery—Conshohocken (Cr.) (U. C. S.). *Delaware*—Wawa (Ja.) (B. Sm.), Concord (W. Tr.), Williamson School (Ws.). *Chester*—(P.). *Lancaster*—York Furnace, Dr. J. B. Brinton (B. C.), Susquehanna (Le.) (Pr.). *Berks*—(P.). *Northampton*—Easton, Porter (B. C.). *Dauphin*—Rockville (Wn.).
New Castle—Brandywine, Wooddale.
 2. *POLYMNIA CANADENSIS* L. M. p. 980. Moist, shaded ravines. Summer.
Delaware—Newtown, Dr. Geo. Smith (Fu.) (B. Sm.). *Chester*—(P.). *Lancaster*—Susquehanna Valley (Le.), Peach Bottom (W. Tr.).

29. *SILPHIUM* L.

1. *SILPHIUM PERFOLIATUM* L. *Rosin-weed, Cup-plant*. M. p. 980. Rich soil along streams; also escaped from gardens. Summer.
Philadelphia—Bartram's Garden, Woodlands Cemetery (Wn.). *Delaware*—Darby (W. Tr.). *Chester*—Marshallton (Pr.). *Lancaster*—Culley's (Br.), Tucquan (P.).
Gloucester—Near Mickleton (He.).

30. *CHRYSOGONUM* L.

1. *CHRYSOGONUM VIRGINIANUM* L. M. p. 982. Dry soil. Spring and summer.
Lancaster—(P.).

31. HELIOPSIS Pers. OX-EYE.

Leaves smooth or nearly so; pappus none, or of 2-4 short teeth.

1. *H. helianthoides*.

Leaves rough; pappus crown-like, or of 1-3 sharp teeth.

2. *H. scabra*.

1. *HELIOPSIS HELIANTHOIDES* (L.) B. S. P. M. p. 984. Banks and copses. Summer.

Philadelphia—Fairmount Park (Wn.). *Bucks*—Near Telford (Fr.), Narrowsville (Ja.). *Montgomery*—Shannonville (Cr.). *Delaware*—Media, Lenni (Fu.), Williamson (Ke.), Swarthmore (Pr.), Valley of Darby Creek (B. Sm.). *Chester*—Westtown (Le.) (W. Tr.). *Lancaster*—(P.). *Northampton*—Easton, Porter (B. C.).

Burlington—Crosswick's Creek (C.). *Camden*—Camden (Ha.). *Gloucester*—Westville (Li.) (Wn.).

New Castle—Frequent.

2. *HELIOPSIS SCABRA* Dunal. M. p. 984. Dry soil. Summer.

Lancaster—(P.). *Northampton*—Easton, Porter (B. C.).

Gloucester—Washington Park (Ja.).

32. ECLIPTA L.

1. *ECLIPTA ALBA* (L.) Hassk. M. p. 984. Along streams and waste places. Summer.

33. RUDBECKIA L. CONE-FLOWER.

Disk globose or ovoid, and purple or dark brown in fruit; lower leaves entire or lobed.

Lower leaves deeply 3-lobed or 3-divided.

1. *R. triloba*.

Leaves neither 3-lobed nor 3-divided.

Plants hispid; chaff acute or acutish, hirsute at summit; style-tips subulate.

Stem-leaves lanceolate, ovate to oblong; involucre shorter than the rays.

2. *R. hirta*.

Stem-leaves oval to obovate; involucre bracts foliaceous, nearly as long as the rays.

3. *R. Brittonii*.

Plants pubescent, hirsute or glabrate; style-tips obtuse.

Leaves denticulate or entire; rays 1.8-2.5 cm. long.

4. *R. fulgida*.

Leaves dentate or laciniate; rays about 3.5 cm. long.

5. *R. speciosa*.

Disk elongated or cylindric in fruit, yellowish or gray; lower leaves pinnately divided or pinnatifid.

6. *R. laciniata*.

1. *RUDBECKIA TRILOBA* L. M. p. 986. Moist soil. Summer and fall.

Delaware—Darby (W. Tr.). *Chester*—Devon (U. C. S.).

2. *RUDBECKIA HIRTA* L. M. p. 986. Meadows. Summer.

3. *RUDBECKIA BRITTONII* Small. M. p. 987. Woods. Early summer.

Lancaster—(P.).

4. *RUDBECKIA FULGIDA* Ait. M. p. 987. Dry soil. Autumn.

Bucks—Ridge Valley, Rock Hill (Fr.), Argus (U. C. S.). *Montgomery*—Green Lane (VP.). *Delaware*—Cheyney (Fu.), Chad's Ford (Te.), Concord (W. Tr.). *Lancaster*—New Texas (Pr.).

Hunterdon—Rosemont (C.).

New Castle—Old fields north of Wilmington; frequent.

5. *RUDBECKIA SPECIOSA* Wenderoth. M. p. 987. Moist soil. Autumn.
Philadelphia—Germantown (Me.), on the Wissahickon (P.). *Delaware*
 —Darby (W. Tr.). *Chester*—(P.).

6. *RUDBECKIA LACINIATA* L. M. p. 988. Low thickets. Summer.

34. *HELIANTHUS* L. SUNFLOWER.

Disk purple, purplish or brown; receptacle flat or convex.

Leaves narrow, linear or lanceolate; perennials. 1. *H. angustifolius*.

Leaves broad, ovate; annuals. 2. *H. annuus*.

Disk yellow or yellowish; receptacle convex or conic.

Leaves prevailing lanceolate and 3-8 times as long as wide.

3. *H. giganteus*.

Leaves prevailing ovate, ovate-lanceolate or oblong.

Leaves sessile or very nearly so.

Stem glabrous; leaves divaricate. 4. *H. divaricatus*.

Stem hirsute or hispid; leaves ascending. 5. *H. mollis*.

Leaves manifestly petioled.

Stem puberulent or glabrous.

Leaves membranous, slender-petioled, sharply serrate.

6. *H. decapetalus*.

Leaves firmer, shorter-petioled, less serrate or entire.

Bracts of the involucre much longer than the disk.

7. *H. trachelifolius*.

Bracts of the involucre about equalling the disk.

8. *H. strumosus*.

Stem hirsute, hispid or scabrous.

9. *H. tuberosus*.

1. *HELIANTHUS ANGUSTIFOLIUS* L. M. p. 991. Low pine-barrens. Autumn.

Bucks—Bristol, Tullytown.

Burlington—Atsion (Le.) (Sa.), Quaker Bridge (Pe.) (Sa.). *Camden*
 —Winslow, Mart. (B. C.), Griffith's Swamp (C.). *Gloucester*—Near
 Mickleton (He.), Swedesboro (Li.). *Cumberland*—Millville (Je.). *At-*
lantic—Egg Harbor, Hammonton (Ke.). *Ocean*—Point Pleasant (Br.),
 Toms River (Ha.) (Wn.), Forked River (U. C. S.) (Wn.). *Monmouth*—
 Asbury Park (Br.), Seabright (C.). *Mercer*—Trenton (C.).

New Castle—Townsend, Tatnall and Canby; Vandyke, Tatnall and
Commons.

2. *HELIANTHUS ANNUUS* L. *Common Sunflower*. M. p. 991. Waste places.
 Summer.

3. *HELIANTHUS GIGANTEUS* L. M. p. 993. Low thickets and swamps.
 Autumn.

4. *HELIANTHUS DIVARICATUS* L. M. p. 994. Thickets and barrens. Sum-
 mer.

5. *HELIANTHUS MOLLIS* Lam. M. p. 994. Dry, barren soil. Late summer.
Delaware—Tinicum (B. Sm.).

6. *HELIANTHUS DECAPETALUS* L. M. p. 994. Copses and low banks of
 streams. Late summer.

7. *HELIANTHUS TRACHELIIFOLIUS* Mill. M. p. 995. Dry soil. Late summer.
Bucks—(P.). *Delaware*—(P.). *Northampton*—(P.).

8. *HELIANTHUS STRUMOSUS* L. M. p. 995. Dry woods and banks. Summer.

- 8a. *HELIANTHUS STRUMOSUS MACROPHYLLUS* (Willd.) Britton. M. p. 995.
 Dry woods. Summer.

Lancaster—(P.). *Northampton*—*Easton*, *Porter* (B. C.).

9. *HELIANTHUS TUBEROSUS* L. *Jerusalem Artichoke*. M. p. 996. Waste places. Summer.

35. *VERBESINA* L. CROWN-BEARD.

1. *VERBESINA ALTERNIFOLIA* (L.) Britton. M. p. 997. Rich soil. Autumn.
Philadelphia—*Gray's Ferry*, *Dr. Geo. Smith* (Fu.) (W. Tr.), *Upper Wissahickon* (Je.), *Woodlands Cemetery* (Mac.) (Te.), *Maylandville Bridge*, *Dr. Geo. Smith* (B. Sm.). *Delaware*—Near *Sandy Bank* (Fu.). *Chester*—(P.). *Lancaster*—*Susquehanna Valley*. *Northampton*—(P.). *Dauphin*—*Steelton* (Wn.).
Burlington—*Burlington* (C.). *Camden*—*Kaighn's Point* (Li.).
New Castle—*Holly Oak* (U. C. S.), *Landlith*.

36. *COREOPSIS* L. TICKSEED.

- Rays pink or occasionally white; leaves linear, entire. 1. *C. rosea*.
 Rays yellow throughout.
 Stem-leaves sessile or petioled, entire, or the lower 3-5-lobed; achenes often with a callous at each end of the inner side. 2. *C. auriculata*.
 Leaves petioled, all but the upper 3-5-divided; rays entire. 3. *C. tripteris*.

1. *COREOPSIS ROSEA* Nutt. M. p. 998. Sandy, grassy swamps. Summer.
Bucks—*Bristol*, *Mart.* (B. C.).
Burlington—*Burlington* (C.), *Florence* (Mac.). *Gloucester*—*Clayton*, *Franklinville* (C.). *Cumberland*—*Vineland* (C.). *Atlantic*—*Egg Harbor*, *Main Road Station* (C.), *Hammonton* (Cr.). *Ocean*—*Forked River* (Ja.) (Wn.).
New Castle—*Sassafras X-roads*, *Canby*.
 2. *COREOPSIS AURICULATA* L. M. p. 999. Woods. Summer.
Philadelphia—*Bartram's Garden* (Te.).
 3. *COREOPSIS TRIPTERIS* L. M. p. 999. Moist woods and thickets. Summer and fall.

37. *BIDENS* L.

- Plants terrestrial, erect; leaves simple or divided.
 Leaves lanceolate, serrate, undivided, rarely lobed.
 Rays present, large and conspicuous, twice as long as the disk or longer. 1. *B. laevis*.
 Rays small, not more than twice as long as the disk, sometimes very short or wanting.
 Heads nodding after flowering. 2. *B. cernua*.
 Heads persistently erect.
 Pappus-awns downwardly barbed.
 Involucral bracts not foliaceous; stem purple; flowers orange. 3. *B. connata*.
 Involucral bracts foliaceous; stem straw-color; flowers greenish-yellow. 4. *B. comosa*.
 Pappus-awns upwardly barbed. 5. *B. bidentoides*.
 Leaves, some or all of them, pinnately 1-3-parted or dissected.
 Rays rudimentary, none, or very short.
 Achenes flat; leaves, some or all of them, 1-3-divided.
 Outer involucral bracts 4-8; achenes nearly black.
 Achenes 4-4.5 mm. long; awns very short; outer bracts 4. 6. *B. discoides*.

Achenes 6 mm. long; awns half as long as the achene;
outer bracts 6-8.

Outer involucre bracts 10-16; achenes brown.

Achenes linear; leaves dissected.

Rays large and conspicuous.

Achenes cuneate or linear-cuneate.

Achenes obovate, very flat.

Bracts of the involucre glabrous or ciliate, short.

Outer bracts of the involucre densely hispid, much longer
than the inner.

1. *BIDENS LAEVIS* (L.) B. S. P. *Bur-Marigold*. M. p. 1000. Wet places.
Summer and fall.
2. *BIDENS CERNUA* L. *Bur-Marigold*. M. p. 1001. Wet places. Summer
and fall.
3. *BIDENS CONNATA* Muhl. *Beggar-ticks*. M. p. 1001. Moist ground.
Autumn.
4. *BIDENS COMOSA* (A. Gray) Wiegand. *Tickseed*. M. p. 1001. Wet soil.
Autumn.
Bucks—Sellersville (Fr.). *Montgomery*—(P.). *Lancaster*—(P.).
Northampton—Easton, *Porter* (B. C.).
New Castle—With *B. connata* but less common.
5. *BIDENS BIDENTOIDES* (Nutt.) Britton. *Beggar-ticks*. M. p. 1001. Muddy
shores. Autumn.
Philadelphia—*Philadelphia*, *Mart.* (B. C.), common (Me.). *Bucks*—
Bristol (Fr.). *Delaware*—*Tinicum* (Fu.).
Burlington—*Delair* (Ja.). *Camden*—*Camden* (He.). *Gloucester*—
Washington Park (Ja.), *Bridgeport* (W. Tr.), *Westville* (Wn.). *Salem*—
Shores of Delaware (C.).
New Castle—*Wilmington* (Pr.), *Delaware River*, *Canby*.
6. *BIDENS DISCOIDEA* (T. & G.) Britton. *Beggar-ticks*. M. p. 1002. Wet
banks and swamps. Summer.
Bucks—*Tullytown* (Cr.), *Bristol* (Fr.). *Delaware*—*Tinicum* (Fu.).
Northampton—*Easton* (Ca.).
Camden—*Shores of Delaware* (C.). *Salem*—*Tidal banks* (C.).
New Castle—*Townsend*, *Canby*; *Delaware River*, *Canby*.
7. *BIDENS FRONDOSA* L. *Common Beggar-ticks*, *Stick-tight*. M. p. 1002.
Moist waste places. Summer and fall.
8. *BIDENS VULGATA* Greene. *Beggar-ticks*. M. p. 1002. Moist soil. Sum-
mer and fall.
9. *BIDENS BIPINNATA* L. *Spanish Needles*. M. p. 1002. Damp soil. Sum-
mer and fall.
10. *BIDENS TRICHOSPERMA* (Michx.) Britton. *Tickseed Sunflower*. M. p.
1002. Swamps near the coast. Autumn.
Philadelphia—*West Philadelphia* (Mac.), *Frankford* (Wn.). *Bucks*—
Bristol (Fr.). *Delaware*—*Tinicum* (Fu.) (B. Sm.). *Chester*—(W. Tr.).
New Jersey—Frequent.
New Castle—Frequent.

- 10a. *BIDENS TRICHOSPERMA TENULOBA* (A. Gray) Britton. M. p. 1003. Swamps. Autumn.

New Castle—Ogletown, west and north piers. Frequent.

11. *BIDENS ARISTOSA* (Michx.) Britton. M. p. 1003. Swamps. Autumn. *Delaware*—Lenni (W. Tr.).

12. *BIDENS INVOLUCRATA* (Nutt.) Britton. M. p. 1003. Swamps. Late summer.

Delaware—Tinicum (P.).

38. GALINSOGA R. & P.

1. *GALINSOGA PARVIFLORA* Cav. M. p. 1004. Waste places. Summer and fall.

39. HELENIUM L. SNEEZEWEED.

Rays fertile; disk yellow.

1. *H. autumnale*.

Rays neutral; disk purple.

2. *H. nudiflorum*.

1. *HELENIUM AUTUMNALE* L. M. p. 1010. Alluvial banks. Autumn.

2. *HELENIUM NUDIFLORUM* Nutt. M. p. 1010. Moist soil. Summer and fall. *Philadelphia*—Haddington. *Montgomery*—Near Ardmore (Pr.). *Delaware*—Valley of Cobb's Creek, Dr. Geo. Smith (P.). *Chester*—Atglen (St.).

40. ACHILLEA L.

1. *ACHILLEA MILLEFOLIUM* L. *Yarrow* or *Milfoil*. M. p. 1013. Fields, roadsides and waste places. Summer and fall.

41. ANTHEMIS L.

Rays neutral; plant glabrous or nearly so, fetid.

1. *A. Cotula*.

Rays pistillate; plants pubescent.

2. *A. arvensis*.

1. *ANTHEMIS COTULA* L. *May-weed*. M. p. 1014. Fields, roadsides and waste places. Summer and fall.

2. *ANTHEMIS ARVENSIS* L. *Corn Chamomile*. M. p. 1014. Fields and waste places. Summer.

ANTHEMIS MIXTA L. Ballast.

Philadelphia—Mifflin Street Wharf (Ja.).

42. CHRYSANTHEMUM L.

Heads large, few or solitary at the ends of the stem or branches.

1. *C. Leucanthemum*.

Heads numerous, small, corymbose; plant escaped from gardens.

2. *C. Parthenium*.

1. *CHRYSANTHEMUM LEUCANTHEMUM* L. *Ox-eye* or *White Daisy*. *White-weed*. M. p. 1015. Fields and meadows. Spring to fall.

2. *CHRYSANTHEMUM PARTHENIUM* (L.) Pers. *Feverfew*. M. p. 1015. Escaped from gardens. Summer.

CHRYSANTHEMUM SEGETUM L. Ballast.

Camden—Camden, I. Burk (He.).

43. MATRICARIA L.

1. MATRICARIA INODOREA L. *Wild Chamomile*. M. p. 1016. Ballast. Summer.

Philadelphia—Greenwich Point (Te.).

Camden—Kaighn's Point, *Mart.* (B. C.) (Ja.).

44. TANACETUM L.

1. TANACETUM VULGARE L. *Tansy*. M. p. 1016. Roadsides, escaped from gardens. Summer.

45. ARTEMISIA L. WORMWOOD.

Marginal flowers pistillate; central flowers perfect, sterile.

1. *A. caudata*.

Marginal flowers pistillate; central flowers perfect, fertile.

Receptacle villous-pubescent.

2. *A. Absinthium*.

Receptacle glabrous or sparingly pubescent.

Leaves dissected, glabrous or pubescent, green, not tomentose.

Leaves finely 2-3-pinnately divided; heads paniculate.

3. *A. annua*.

Leaves pinnately divided; segments pinnatifid; heads in leafy spikes.

4. *A. biennis*.

Leaves densely white-canescenscent or tomentose, at least beneath.

Leaves pinnatifid or dissected.

Heads 6-8 mm. broad; racemose-glomerate; sea-beach plant.

5. *A. Stelleriana*.

Heads 2-4 mm. broad, spicate-paniculate or racemose.

Leaves deeply pinnatifid, the segments mostly incised.

6. *A. vulgaris*.

Leaves finely dissected into short, linear lobes.

7. *A. Pontica*.

Leaves lanceolate, oblanceolate or linear, serrate, somewhat lobed or entire, not pinnatifid.

8. *A. gnaphalodes*.

1. ARTEMISIA CAUDATA Michx. M. p. 1018. Dry, sandy soil. Summer.

New Jersey—Common in the pine-barrens, especially near the coast.

2. ARTEMISIA ABSINTHIUM L. M. p. 1019. Waste places and ballast. Summer.

Philadelphia—Woodlands Cemetery (Gi.), Greenwich Point (Te.).

3. ARTEMISIA ANNUA L. M. p. 1019. Waste places. Summer.

Bucks—Nockamixon (Fr.) (Ja.). *Delaware*—(P.). *Northampton*—

Easton, *Porter* (B. C.).

Camden—Kaighn's Point (Ja.).

New Castle—Clayton Street near Delaware Avenue, *Tatnall*; *Brandywine Park*, north side, *F. Guiney*.

4. ARTEMISIA BIENNIS Willd. M. p. 1019. Waste places. Summer.

Philadelphia—Navy Yard (Ca.), Gibson's Point (Mac.).

Camden—Kaighn's Point (Ja.) (Wn.).

New Castle—New Castle, *Commons*.

5. ARTEMISIA STELLERIANA Bess. M. p. 1019. Escaped from cultivation. Summer.

Cape May—Wildwood (Ja.) (Wn.), Sewell's Point (VP.). *Ocean*—*Beach Haven* (Li.), *Toms River* (C.). *Monmouth*—*Sandy Hook*, *Highlands* (C.).

6. *ARTEMISIA VULGARIS* L. *Common Mugwort*. M. p. 1019. Waste places. Summer and fall.
7. *ARTEMISIA PONTICA* L. *Roman Wormwood*. M. p. 1020. Waste places. Summer.
Hunterdon—Tumble Station (C.).
8. *ARTEMISIA GNAPHALODES* Nutt. *Western Mugwort*. M. p. 1020. Bal-
last. Autumn.
Philadelphia—Philadelphia, I. Burk (He.). *Chester*—Shrack's Hol-
low, South Valley Hill, Joseph Crosson (Windle.).
New Castle—Townsend, Canby and Tainall.

46. *TUSSILAGO* L.

1. *TUSSILAGO FARFARA* L. *Coltsfoot*. M. p. 1021. Wet places along
brooks. Spring.
Philadelphia—Navy Yard, Mart. (B. C.), League Island (Le.), Girard
Point, Greenwich Point (Te.). *Delaware*—Darby near the Bell Tavern,
Dr. Geo. Smith (B. Sm.). *Northampton*—Bethlehem (Ca.) (Kr.).
Camden—Kaighn's Point.

47. *PETASITES* Gaertn.

1. *PETASITES PETASITES* (L.) Karst. *Sweet Coltsfoot*. M. p. 1022. Culti-
vated and waste ground. Spring.
Philadelphia—(P.). *Bucks*—Rock Hill (Cr.) (Fr.). *Delaware*—
Upper Darby (B. Sm.). *Northampton*—Bangor (P.).

48. *ARNICA* L.

1. *ARNICA ACAULIS* (Walt.) B. S. P. *Leopard's-bane*. M. p. 1022. Low
woods. Spring.
Chester—Oxford (Cr.). *Lancaster*—Pleasant Grove (Ca.), Little
Britain Twp. (Pr.), New Texas (P.).

49. *ERECHTITES* Raf.

1. *ERECHTITES HIERACIFOLIA* (L.) Raf. *Fire-weed*. M. p. 1023. Woods,
thickets and waste places. Summer.

50. *MESADENIA* Raf. INDIAN PLANTAIN.

Leaves green, both sides, angulate-dentate. 1. *M. reniformis*.
Leaves glaucous beneath, green above, angulate-lobed. 2. *M. atriplicifolia*.

1. *MESADENIA RENIFORMIS* (Muhl.) Raf. M. p. 1024. Rich, damp woods.
Summer.
Lancaster—York Furnace (Ca.) (U. C. S.). *Northampton*—(P.).
Camden—Banks of the Delaware (C.).
2. *MESADENIA ATRIPLICIFOLIA* (L.) Raf. M. p. 1024. Rich woodlands.
Summer.

51. *SYNOSMA* Raf. INDIAN PLANTAIN.

1. *SYNOSMA SUAVEOLENS* (L.) Raf. M. p. 1024. Rich woods. Autumn.
Lancaster—York Furnace.
Monmouth—Freehold (C.). *Mercer*—Princeton (C.).

52. *SENECIO* L. GROUNDSEL. SQUAWWEED.

Heads conspicuously radiate (except in forms of 2 and 5).

At least the lowest leaves entire or dentate, not pinnatifid.

None of the leaves cordate.

Leaves and stems persistently more or less tomentose or woolly.

1. *S. tomentosus*.

Leaves glabrous or nearly so; stem often woolly, especially below.

Basal leaves obovate, spatulate or oval; achenes glabrous.

Basal leaves obovate or suborbicular, crenate or dentate; involucre bracts 4-5 mm. long.

2. *S. obovatus*.

Basal leaves ovate to oval; involucre bracts 6-10 mm. long.

3. *S. Crawfordii*.

Basal leaves oblong; achenes glabrous or hispidulous.

4. *S. Balsamitae*.

Basal leaves cordate or subcordate; plants mostly glabrous.

5. *S. aureus*.

Leaves all pinnatifid or coarsely sinuate-dentate; plants glabrous, or somewhat woolly when young.

6. *S. Jacobea*.

Heads discoid, the rays none, or minute; introduced species.

7. *S. vulgaris*.

1. *SENECIO TOMENTOSUS* Michx. M. p. 1026. Moist soil. Spring.

Cape May—Oceanview (C.), Woodbine (Br.), Cape May (Cr.), Sea Isle, I. Burk (He.). *Atlantic*—Landisville (C.), near Egg Harbor (Wn.).

New Castle—Near A. Deakynes', Blackbird Head, Tatnall and Commons.

2. *SENECIO OBOVATUS* Muhl. M. p. 1027. Open grounds. Spring.

Bucks—Springfield (Fr.), Nockamixon (He.) (Ws.). *Northampton*—Easton, Porter (B. C.).

Camden—River Swamp (C.).

2a. *SENECIO OBOVATUS ELONGATUS* (Pursh.) Britton. M. p. 1027. Open grounds. Spring.

Northampton—Easton (P.).

3. *SENECIO CRAWFORDII* Britton. M. p. 1027. Moist soil. Spring.

Bucks—Tullytown (Cr.).

Camden—Springdale (St.). *Mercer*—Near Lawrence Station.

4. *SENECIO BALSAMITAE* Muhl. *Golden Ragwort*. M. p. 1027. Dry or rocky soil. Early summer.

Bucks—East of Wheatshaf, Nockamixon (Cr.), Perkasio (Fr.), Rock Hill, Dr. J. B. Brinton (He.). *Montgomery*—Ivy Rock (Ja.) (Ke.), Lafayette (Ja.) (Ke.). *Delaware*—Near Media (Fu.), Williamson (Le.), Swarthmore (Ws.). *Chester*—Phoenixville, Mart. (B. C.), Westtown (Le.), Uniontown (St.), French Creek (Sts.). *Northampton*—(P.).

New Castle—Serpentine banks. Scarce.

5. *SENECIO AUREUS* L. *Golden Ragwort*. M. p. 1028. Moist soil. Early summer.6. *SENECIO JACOBEEA* L. M. p. 1029. Ballast. Summer.

Camden—Kaighn's Point (He.) (Ja.).

7. *SENECIO VULGARIS* L. *Common Groundsel*. M. p. 1029. Waste ground. Spring to fall.

Philadelphia—Byberry, Mart. (B. C.), Wissahickon (Je.), Germantown (Me.), Greenwich Point (Te.). *Bucks*—Sellersville (Fr.). *Delaware*—Media, Dr. Geo. Smith (Fu.), Lansdowne (Pe.).

Camden—Kaighn's Point.

New Castle—Introduced about nurseries.

53. ARCTIUM L. BURDOCK.

Bracts of the involucre copiously woolly.

Bracts of the involucre glabrous or nearly so.

1. *A. tomentosum*.

2. *A. minus*.

1. *ARCTIUM TOMENTOSUM* (Lam.) Schk. M. p. 1030. Waste places. Summer.

Delaware—Media, Dr. Geo. Smith (P.).

2. *ARCTIUM MINUS* Schk. Common Burdock. M. p. 1030. Waste places. Summer and fall.

54. CARDUUS L. THISTLE.

Pappus-bristles, at least those of the inner flowers, plumose.

Outer involucre bracts, or all of them, strongly prickly-pointed.

Leaves glabrous or hispid above, tomentose beneath.

All the bracts of the involucre tipped with prickles; naturalized weed.

1. *C. lanceolatus*.

Outer bracts prickly-tipped, the inner merely acuminate; native species.

Leaves undivided, lobed or dentate, rarely pinnatifid.

2. *C. altissimus*.

Leaves deeply pinnatifid into lanceolate or linear segments.

3. *C. discolor*.

Leaves green on both sides, somewhat pubescent beneath.

4. *C. odoratus*.

Bracts of the involucre not at all prickly-pointed, or scarcely so.

Heads large, few, 3-10 cm. broad; flowers all perfect and fertile.

Heads involucre by the upper very spiny leaves; flowers usually yellow.

5. *C. spinosissimus*.

Heads peduncled, naked, or with 1 or 2 bracts at the base; flowers purple.

6. *C. muticus*.

Heads small, numerous, 2.5 cm. broad or less; flowers imperfect, dioecious.

7. *C. arvensis*.

Pappus-bristles simple or minutely serrulate.

8. *C. nutans*.

1. *CARDUUS LANCEOLATUS* L. M. p. 1031. Pastures and roadsides. Summer.

2. *CARDUUS ALTISSIMUS* L. M. p. 1031. Fields and copees. Summer.

3. *CARDUUS DISCOLOR* (Muhl.) Nutt. M. p. 1031. Fields and roadsides. Summer and fall.

4. *CARDUUS ODORATUS* (Muhl.) Porter. M. p. 1032. Dry fields. Summer.

5. *CARDUUS SPINOSISSIMUS* Walt. Yellow Thistle. M. p. 1033. Sandy fields. Summer.

Philadelphia—West Philadelphia (Mac.), Germantown (St.), Angora (Te.). *Delaware*—Williamson (Le.), Lansdowne (Pe.), Swarthmore (Pr.), Middletown and Chrome Run (B. Sm.), Darby Creek (VP.), Media (Ws.), Wallingford (Wn.), Tinicum (St.). *Chester*—(P.). *Lancaster*—(P.).

Burlington—Pemberton (C.), near Moorestown (B. Sm.). *Camden*—

Grenloch (He.), Clementon, Lindenwold (VP.). *Gloucester*—Mickleton (He.), Swedesboro (Li.). *Cape May*—Cape May (He.), Wildwood (Ja.). *Atlantic*—Atlantic City (Te.), Absecon (Wn.). *Ocean*—Point Pleasant (Br.), Seaside Park (Ha.), Forked River (Ja.). *Hunterdon*—Rosemont (C.).

New Castle—East of Folly Woods. Rare.

6. *CARDUUS MUTICUS* (Michx.) Pers. M. p. 1033. Swamps and low woods. Summer and fall.

Bucks—Near Sellersville (Fr.). *Montgomery*—Glenside (VP.). *Delaware*—Mineral Hill (He.), Valley of Darby Creek, Chrome Run (B. Sm.), Concord (W. Tr.), Williamson (Wn.). *Chester*—West Bradford Twp. (St.). *Lancaster*—(P.). *Berks*—(P.). *Lehigh*—Salisbury (Kr.). *Northampton*—(P.). *Dauphin*—(P.).

Camden—Lindenwold (VP.). *Gloucester*—Mullica Hill (C.), near Mickleton (He.), Swedesboro (Li.). *Salem*—Woodstown (Wa.). *Ocean*—Forked River (Mac.). *Mercer*—Princeton, Trenton (C.).

New Castle—Thompson's and elsewhere. Frequent.

7. *CARDUUS ARVENSIS* (L.) Robs. *Canada Thistle*. M. p. 1033. Fields and waste places. Summer.

8. *CARDUUS NUTANS* L. *Musk Thistle*. M. p. 1033. Waste places and ballast. Summer and fall.

Philadelphia—Greenwich Point (Te.). *Dauphin*—Harrisburg (Wn.).

Camden—Kaighn's Point, I. Burk (He.) (Li.).

CARDUUS ACANTHOIDES. Ballast. Summer.

Camden—Camden, I. Burk (He.).

CARDUUS PYCNOCEPHALUS L. Ballast. Summer.

Camden—Kaighn's Point (Ja.).

55. ONOPORDON L.

1. *ONOPORDON ACANTHIUM* L. *Cotton or Scotch Thistle*. M. p. 1034. Waste places. Summer.

Philadelphia—Oakdale, Mart. (B. C.), below Gray's Ferry (Wn.). *Delaware*—Haverford (Wn.), shore of Delaware, Tinicum, Dr. Geo. Smith (Fu.).

Camden—Ballast (C.). *Ocean*—Point Pleasant (Wn.). *Mercer*—Trenton, Princeton (C.).

56. CENTAUREA L.

Bracts of the involucre lacerate or fimbriate, not spiny.

Annual; pappus about the length of the achene.

Perennials; pappus obsolete or short.

Bracts of the involucre tipped with stout, nearly simple spines.

1. *C. Cyanus*.

2. *C. nigra*.

3. *C. Calcitrapa*.

1. *CENTAUREA CYANUS* L. *Bluebottle*. M. p. 1035. Roadsides; escaped from cultivation. Summer.

2. *CENTAUREA NIGRA* L. *Knapweed*. M. p. 1035. Waste places. Summer.

Philadelphia—Fairmount Park on sides of Basin, 48th and Baltimore Ave. (B. Sm.).

Camden — Kaighn's Point. *Gloucester* — Mickleton (C.). *Mercer* — Trenton (C.). *Middlesex* — Woodbridge (C.).

New Castle — Wilmington, *Mart.* (B. C.).

3. *CENTAUREA CALOTRAPA* L. *Star Thistle*. M. p. 1035. Waste places.
Summer and fall.

Philadelphia — Greenwich Point (Te.). *Bucks* — Tullytown (Ja.).

Camden — Kaighn's Point. *Mercer* — Trenton, Princeton (C.).

CONIA TURBINATA Pers. Ballast.

Camden — Kaighn's Point.

SCOLYMUS HISPANICUS L. Ballast.

Camden — Kaighn's Point.

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